9 July 2018

Martin J. Kenney
LEX-LAZ West Hartford, LLC
30 Lewis Street, 4th Floor
Hartford, CT 06103

Re: Geotechnical Engineering Study
One Park (The Project)
27 Park Road, West Hartford Connecticut
Langan Project No.: 140184201

Dear Mr. Kenney,

This report presents our geotechnical engineering study for the proposed redevelopment of the Sisters of Saint Joseph's Convent in West Hartford, Connecticut. The purposes of this study were to explore subsurface conditions, evaluate feasible foundation options, and develop geotechnical engineering recommendations. Services were performed in accordance with our authorized proposal (10 May 2018).

Our approach and recommendations were developed considering a "Grading & Drainage Plan" (21 June 2018) prepared by Langan and subsequent correspondence provided Amenta Emma Architects. Changes to the design scheme must be reviewed by Langan for effects on our recommendations.

Existing elevations cited in this report were obtained from a plan (4 January 2018) prepared by Amenta Emma Architects, referencing the NAVD 88 datum.

SITE DESCRIPTION

The 21-acre site located at 27 Park Road in West Hartford, Connecticut is bound by Park Road to the north, Prospect Avenue to the east, a commercial building and Kennedy Memorial Park to the south, and Ringgold Street and commercial and residential properties to the west. Figure 1 shows the site location and surrounding properties.

The site is currently occupied by:

- a convent and chapel,
- an outparcel building and chimney, and
- two maintenance garages.

The convent is primarily brick/masonry construction and the chapel is primarily stone masonry construction. The convent is four to five stories tall and has a footprint of about 41,000 square-

feet. The chapel is about three stories tall with a vaulted ceiling and has a footprint of about 9,000 square-feet. The buildings are connected with a three story hallway. Select parts of the covenant have a partial walk-out basement level to the south. The ground floor elevation is at about el. +66 and the basement floor elevation is at about el. +55. An underground tunnel running northwest to southeast connects two parts of the covenant.

The brick and masonry outparcel building is one story tall, has a footprint of about 1,500 square-feet, and has a finished floor elevation of about el. +59. An about 6-story tall brick and masonry chimney is located immediately to the south of the outparcel building.

The maintenance garages have footprints of about 600 and 2,000 square-feet each and finished floor elevations of about el. +54.

The remaining parts of the site are landscaped and paved. Wetlands (located outside of the proposed development area) are located along the southern and western property lines.

Multiple underground utilities run through the site (sanitary, storm, gas, electric, etc.). A 40-foot-wide sanitary easement (in favor of the City of West Hartford) runs east-west to the south of the existing convent/chapel building and proposed development area.

Existing site grades slope up from south to north (about el. +44 to el. +72). Within the proposed development area, existing grades slope up from south to north (about el. +51 to el. +65).

PROPOSED DEVELOPMENT

The proposed development consists of a 45,000 square-foot addition to the existing main structure. The addition will be about five stories tall with no basement levels. The proposed finished floor elevation will be about el. +54. Currently, the design team is contemplating raising a part of the slab at the northeast corner to a higher elevation. The ground floor will be a mix of parking and residential space; the floors above will be primarily residential.

About 4,500 square feet of the existing main structure will be demolished to enlarge an existing internal courtyard. The maintenance garages will also be demolished.

Within the proposed building addition, cuts up to about 9 feet are proposed. Throughout the rest of the site, cuts and fills up to about 5 feet are proposed. Three fill retaining walls are proposed up to about 7 feet tall supporting paved parking area and drive aisles.

Structural loads provided by the structural engineer (13 June 2018) include maximum exterior and interior column loads up to 200 and 300 kips, respectively.

REVIEW OF AVAILABLE INFORMATION

Regional Geology

The 1992 "Surficial Materials Map of Connecticut" (Figure 2) indicates the overburden is fines. The 1985 "Bedrock Geological Map of Connecticut" (Figure 3) indicates the bedrock below the site is Portland Arkose. Both maps were prepared by the Connecticut Geological and Natural Resource Survey.

Federal Emergency Management Agency Flood Map

We reviewed the Flood Insurance Rate Map (FIRM) for the Town of West Hartford published by the Federal Emergency Management Agency (FEMA), Map No. 09003C0364F effective 09/26/2008 (Figure 4). The areas of the proposed development are located in Zone X, "areas determined to be outside the 0.2% floodplain (500 year floodplain)." The southern and western parts of the site (outside of the proposed development area) are located in Zone A, "Areas subject to inundation by the 1-percent-annual-chance flood event (100-year floodplain);" base flood elevations have not been established in this area.

Available Geotechnical Report

We have reviewed a geotechnical report entitled "Arcadia Crossing" prepared by GEI Consultants, Inc. (19 February 2015). The report includes 18 soil borings (advanced to about 27 to 45 feet below grade), four observation wells, and laboratory testing. Pertinent information from the report is provided in Appendix A.

Existing Foundation Plan

We reviewed a proposed foundation plan for a part of the existing convent entitled "Footing & Pile Plan" prepared by Louis A. Walsh, Architect, Waterbury, CT (10 October 1940). The plan shows 361 concrete piles driven to a capacity of 30 tons each supporting wall and interior footings. The plan does not indicate the specific type of pile.

Foundation plans for the remaining parts of the existing buildings were not available for our review.

SUBSURFACE EXPLORATION

Langan performed a subsurface exploration consisting of five borings and three test pits to supplement the available information referenced above. The exploration work was overseen on a full-time basis by a Langan field engineer. An exploration location plan is shown in Figure 5.

Borings

Five borings (LB-01 through LB-05) were drilled by Site LLC from 24 to 30 May 2018. The borings were advanced with a truck-mounted CME-75 rig using hollow-stem-auger drilling techniques. Borings were advanced between 55 feet and 75 feet below the existing grades (about el. -18 to el. -3).

Standard Penetration Test (SPT) N-values[1] were documented and soil samples were generally obtained continuously to a depth of 12 feet and every 5 feet thereafter. Disturbed soil samples were obtained using a standard 2-inch-outer-diameter split-spoon sampler driven by a 140-pound automatic hammer in accordance with ASTM D1586, Standard Penetration Test. Undisturbed soil samples were obtained using a 2-inch-outer-diameter thin-wall-tube sampler in accordance with ASTM D1587.

Recovered soil samples were visually examined and classified in the field in general accordance with the Unified Soil Classification System (USCS). Soil classifications, N-values, and other field observations were recorded on our field logs provided in Appendix B.

Bedrock was cored in two borings (LB-02 and LB-05) using a 2-⅞-inch NX double-tube core barrel. The core barrel was equipped with a diamond cutting bit in accordance with ASTM D2113, Rock Core Drilling. Rock type, percent recovery (REC)[2] and Rock Quality Designation (RQD)[3] were determined for the core run provided in Appendix B.

Test Pits

Three test pits (TP-01, TP-04, and TP-05) were performed by Polster Industries LLC, on 29 May 2018. The test pits were performed with a CAT 304 Mini-Excavator about 6 to 10 feet below existing grades (about el. +48 to el. +50). The test pits were performed for stormwater design purposes and to observe existing foundations. Test pit logs are provided in Appendix C. Sketches and photographs for test pits TP-04 and TP-05 are provided in Appendices D and E, respectively.

[1] The Standard Penetration Test (SPT) is an in situ testing technique used to infer soil density and consistency. The SPT N-value is defined as the number of blows required to drive a 2-inch-diameter split-barrel sampler 12 inches after an initial penetration of 6-inches using a 140-pound hammer falling freely from 30 inches.

[2] Rock Core Recovery (REC) is defined as the ratio of the total length of rock recovered to the total core run length, expressed as a percent.

[3] The RQD is defined as the ratio of the summation of each rock piece greater than 4 inches long (for NX cores) to total core run length, expressed as a percent.

Lab Testing

Selected samples were sent to a testing laboratory to confirm visual classifications and to determine index properties (physical and mechanical). Three grain-size analyses, three moisture-content determinations, five Atterberg Limit tests, and three unconsolidated-undrained compressive strength tests were performed. The results are provided in Appendix F.

SUBSURFACE CONDITIONS

The subsurface conditions within the proposed development generally consist of a surficial layer of topsoil or asphalt, underlain by layers of fill, varved silt and clay, glacial till, and bedrock. Bedrock was encountered from about 55 to 69 feet below existing grade (about el. -13 to el. +3). Groundwater was first encountered in the borings from about 10 to 15 feet below existing grade (about el. +41 to el. +48). Groundwater was observed to stabilize in the observation wells from about 3 to 11 feet below existing grade (about el. +45 to el. +67). A detailed description of subsurface materials encountered is provided below in order of increasing depth.

The results of our subsurface exploration work are generally consistent with the results from the available information with additional details at greater depths.

Surficial Materials – A surficial layer of asphalt pavement about 3- to 4-inches-thick was encountered in three borings (i.e. LB-02, LB-03 and LB-04). A surficial layer of topsoil about 6- to 12-inches-thick was encountered in two borings (LB-01 and LB-05). The topsoil generally consists of silty sand with varying proportions of clay, gravel, and roots.

Fill – A layer of fill about 1-to 5-feet-thick was encountered below the surficial materials in three borings (LB-01, LB-03 and LB-04). The fill is generally composed of dark brown fine to course sand and brown silt with varying amounts of fine gravel, silt, asphalt, brick, rock fragments, and synthetic fibers. SPT N-values vary from about 5 to 23 blows per foot (bpf). Laboratory testing of samples reported a fines content about 27%. The measured moisture content was about 9%. The fill layer is generally classified as silt and sand (SP and ML) in accordance with the USCS.

Varved Silt & Clay – A layer of varved silt and clay about 33- to 51-feet-thick was encountered below the fill in all borings. The top of the varved silt and clay was encountered about 2 to 5 feet below existing grade (about el. +54 to el. +61). The varved silt and clay is generally composed of reddish-brown to brown silt and clay with varying amounts of sand and fine gravel. SPT N-values vary from weight of rod (WOR) to 22 bpf. Laboratory testing of samples reported a water content between about 27 and 69%. The liquid limit ranged from about 42 to 61. The plastic limit ranged from about 23 to 26. The plasticity index ranged from about 19 to

35. The compressive strength ranged from about 960 to 1,660 pounds-per-square-foot (psf). The shear strength from three tests was about 480, 680, and 840 psf. The varved silt and clay layer is generally normally consolidated and classified as silt and clay (ML and CL) in accordance with the USCS.

Glacial Till – A layer of glacial till about 16- to 22-feet-thick was encountered below the varved silt and clay in all borings. The glacial till is generally composed of reddish-brown fine to coarse sand with varying amounts of clay, silt, and gravel. SPT N-values vary from about 11 to 79 bpf. Laboratory testing of samples reported fines content between about 29 and 34%. The measured moisture content was about 10%. The glacial till layer is generally classified as clayey sand or silty sand (SP) in accordance with the USCS.

Bedrock – Bedrock was encountered from about 55 to 75 feet below grade (about el. -13 to el. +3) in four borings (LB-01, LB-02, LB-04, and LB-05) as evidence by refusal of the drilling equipment. Bedrock was cored in two borings (LB-02 and LB-05) at about 54 to 68 feet below grade (i.e. about el. -13 to +3). The bedrock consists of Portland Arkose. The RQD ranged from about 67 to 73% and the REC was about 100%.

Groundwater – Groundwater was encountered from about 10 to 15 feet below existing grade in all borings during our exploration work (about el. +41 to el. +48). Groundwater readings were collected from available observation wells. Groundwater was observed from about 3 to 11 feet below grade (about el. +45 to el. +67) in the wells. Generally our recorded groundwater elevations were shallower than the elevations from the available information. Table 1 summarizes the available and Langan-recorded groundwater depths and elevations.

Within the footprint of the proposed building, groundwater was encountered and observed from about el. +41 to el. +51.

Groundwater should be expected to fluctuate with time as a result of seasonal variations, utility breaks, precipitation, and construction activities.

Table 1. Observation Groundwater Readings.

	Date	OW-1		OW-2		OW-3		OW-4	
		Depth (ft)	El.	Depth (ft)	El.	Depth (ft)	El.	Depth (ft)	El.
GEI	1/11/15			5.9	+45.1				
	1/22/15	6.0	+48.0	4.9	+46.1	8.1	+46.4		
	1/23/15							11.1	+59.9
Langan	5/25/18	3.2	+50.8	2.9	+48.1	4.8	+49.7	4.3	+66.7
	5/29/18	5.7	+48.3	4.9	+46.1	7.7	+46.8	6.7	+64.3

TEST PIT RESULTS

Test Pit TP-04 – Test Pit TP-04 was advanced along the southern edge of the existing building. The building wall is supported by an about 5 foot tall concrete grade beam, an about 1.5 foot tall concrete pile cap, and an about 16-inch diameter, corrugated steel pipe pile filled with concrete. Groundwater was not encountered in the test pit. The location of the test pit is shown in Figure 5. Sketches and photographs of the test pit are provided in Appendix D.

Test Pit TP-05 – Test Pit TP-05 was advanced along the southern edge of the existing building. The building wall is supported by an about 3 foot tall grade beam, an about 3 foot tall concrete pile cap, and an H-pile encased in concrete. The H-pile is similar to a HP 12x53. Groundwater was not encountered in the test pit. The location of the test pit is shown in Figure 5. Sketches and photographs of the test pit are provided in Appendix E.

GEOTECHNICAL DESIGN RECOMMENDATIONS

Our geotechnical evaluation and recommendations for seismic design, foundations, ground improvement, floor-slabs, permanent groundwater control, and below-grade walls are provided below.

Seismic Design

This section presents seismic design recommendations for use with the 2016 Connecticut State Building Code (2012 International Building Code). Note, a new State Building Code (2015 International Building Code) is expected to be adopted the summer of 2018. The design team must notify Langan if supplemental seismic design recommendations are required based on the new code.

We have considered the soil conditions encountered in the borings to be consistent and representative of the soil conditions in the top 100 feet of soil at this site. The soil conditions found in the borings were used to determine site class and recommendations.

Table 2. Seismic Design Values

Description	Parameter	Recommended Value
Mapped Spectral Acceleration for short periods:	S_s	0.181 g
Mapped Spectral Acceleration for 1-sec period:	S_1	0.064 g
Site Class:	--	**E – Soft soil profile**
Site Coefficient:	F_a	2.5
Site Coefficient:	F_v	3.5
5% damped design spectral response acceleration at short periods:	**S_{DS}**	**0.302 g**
5% damped design spectral response acceleration at 1-sec period:	**S_{D1}**	**0.149 g**
Anticipated Risk Category	--	**II**
Seismic Design Category	**--**	**C**

Based on the above spectral accelerations and the anticipated risk category we have estimated the Seismic Design Category (SDC). The structural engineer is responsible for confirming the appropriate use group, occupancy category, and final SDC for the proposed structure.

Foundations

The materials encountered at the anticipated footing elevation consists of fill or varved silt and clay. The underlying varved silt and clay is not suitable for foundation support without improvement because of the magnitude of the anticipated settlements. The proposed structure can be supported on either a deep foundation system or on a shallow foundation system supported on improved ground. Based on conversations with the design team, we understand that the preference is the latter (i.e. shallow foundations with ground improvement). The advantages of ground improvement are:

- the ground improvement system is independent of the foundation system (as such a conventional shallow foundation system can be designed),
- deep excavations adjacent to existing structures and hardscapes will not be required, and
- settlements are reduced to acceptable levels.

Given the specialty nature of ground improvement, the systems are typically designed by a specialty contractor based on the project performance criteria.

If the project team desires to pursue a deep foundation system, we can provide supplemental recommendations.

Footing subgrades should be prepared in accordance with the Ground Improvement and Subgrade Preparation sections of this report. All exterior footings should be constructed 42 inches or deeper below the lowest adjacent grade for frost protection. Interior footings in heated spaces may be constructed at a convenient depth below the slab; however, all bottoms of footings should be at least 1.5 feet below the finished-floor elevation. Isolated column footings should have a minimum dimension of 3 feet and strip footings should have a minimum width of 2 feet even if smaller dimensions can be justified using the recommended allowable bearing pressure.

Foundations should not be located so that one foundation is within the zone of influence of an adjacent foundation. The zone of influence is taken as a 1H:1V projection extending outward and downward from the edge of the foundation.

Ground Improvement

Ground improvement elements are generally stone columns installed on a grid pattern beneath foundation elements and slabs. Given the soft nature of the varved silt and clay, we expect that the stone columns will be mixed with concrete or grout, known as geo-concrete columns (GCCs) or controlled modulus columns (CMCs).

GCCs or CMCs consist of drilling a hollow auger through the fill and into the underlying natural competent material and filling the excavated hole with a cement-based grout column using pressure through the hollow auger. The process of augering leaves the majority of the drilled soil in place to minimize the generation of spoils. The GCCs and CMCs essentially improve the ground conditions by providing a stiff composite ground mass.

The number of GCCs or CMCs at each location will be dependent on the loading and will be installed beneath columns, walls, and slabs. The spacing of CMCs beneath the perimeter wall typically range from 4 to 10 feet. Typical grid spacing beneath a floor slab range from about 8 to 12 feet. GCCs and CMCs are typically 10 to 20 inches in diameter. CMCs would be advanced to about 20 to 40 feet below grade.

The CMC diameter, spacing, grout mix and strength, and locations should be designed by a Professional Engineer licensed in Connecticut and submitted to our firm for review. We recommend that spacing of GCCs or CMCs and estimated settlement be verified before

construction by performing a footing load test and/or modulus test within the proposed structure footprint. Because the subsurface conditions vary throughout the site, we recommend that two load-test areas be selected.

The CMC installer should be aware of the potential for unfavorable subsurface soil and groundwater conditions in developing their scope of work and should be able to install the GCCs or CMCs without delay.

After installing the GCCs or CMCs, a load-transfer platform (LTP) consisting of about 2 feet of granular material (sand and gravel mixture) should be placed between the aggregate piers or CMCs and the proposed footings. As part of the design for the load-transfer platform, a layer of geogrid can be incorporated to more evenly distribute the building slab load and reduce the amount of differential settlement. The footing subbase layer can also be incorporated into the LTP.

While design of this system would be performed by others as outlined above, the design should be such that allowable bearing after improvement is about 4,000 to 5,000 psf and total and differential settlements would be limited to 1 inch and ½ inch, respectively. The design must also take into account differential settlements between the existing and proposed buildings.

Floor Slabs

We recommend that ground-floor slabs be constructed as a slab-on-grade bearing on ground improvement as noted above.

We recommend a minimum 6-inch-thick layer of ¾-inch clean crushed stone be included beneath the slabs to protect the prepared subgrade and to serve as a capillary break. A vapor barrier should be used below the ground-floor slab to limit transmission of water vapor through the slab. We recommend a robust membrane such as the Florprufe product by GCP Applied Technologies. Omission of a vapor barrier can lead to floor-covering problems including delamination and mold.

Permanent Groundwater Control

Perimeter wall and footing drains should be installed around the entire structure to divert groundwater flow away from the structure during prolonged precipitation, snowmelt, or utility breaks. Manufactured geocomposite drainage panels or a 12-inch-wide layer of ¾-inch clean crushed stone should be installed against the outside of all perimeter walls and should extend to within 1 foot of adjacent surface grade. The drainage panels (or crushed stone) should connect to a perforated footing drain at the base of the footing having a minimum diameter of 6

inches. The footing drains should be connected to the site stormwater system and where possible drain by gravity. Where used, drainage panels should be secured in place and the filter-fabric side must face the soil. If clean crushed stone is used, it should be wrapped with a geotextile filter fabric.

A design groundwater elevation of el. +54 should be used for pits that extend below the finished floor elevation. The pits should be fully waterproofed.

Below Grade Walls

Permanent below-grade walls, which are considered to be fixed against rotation, should be designed to resist soil, surcharge, and static earth pressures. Backfill should not be placed against below-grade walls until the wall concrete has reached its 28-day compressive design strength and after either the ground-floor slab has been completed, or temporary lateral bracing has been provided and approved by the structural engineer.

We recommend that the below-grade foundation walls (i.e. non-yielding) be designed using a triangular earth-pressure distribution having an equivalent fluid weight of 60 lb/ft^2 per foot of depth. Surcharge loading on the below-grade foundation walls should be included by adding a uniform stress equal to one-half the surcharge load in addition to the soil loading. The design lateral pressures provided presume the use of free-draining clean stone as backfill or a manufactured drain panel such as MiraDRAIN behind the walls. Our recommended lateral earth-pressure presumes the groundwater level below the bottom of the wall as encountered during our exploration work to date.

GEOTECHNICAL CONSTRUCTION RECOMMENDATIONS

Site Preparation

Site development plans include demolition and removal of select existing site features. All existing foundations, floor slabs, and utilities should be completely removed within 10 feet of the proposed footprint (expect those designated to remain).

Based on our review of available foundation plans for the existing building, the part of the existing building to be demolished is supported on driven concrete piles. During the demolition work, the piles should be cut-off a minimum of 3 feet below proposed hard-scape features above. We request that the demolition contractor provide a plan showing the locations of the existing piles.

Below-grade structures outside of the building footprint can be abandoned in place provided they are removed within 3 feet of finished subgrade levels, 2 feet below proposed utilities, and so as not to conflict with new site improvements. Slabs left in place should be sufficiently

broken up to allow water to drain, and so that a qualified observing geotechnical engineer can observe if voids exist beneath the slab. Existing asphalt pavement and concrete walkways should be completely removed.

Existing utilities within the building footprint should be completely removed. Existing utilities outside of the proposed building footprint should be removed or abandoned in place by completely filling with grout.

Excavations made to remove below-grade elements should be backfilled with approved, compacted fill in accordance with the Excavation, Fill, Placement, and Compaction Criteria section of this report and any environmental requirements.

Clearing and grubbing of trees and vegetation designated for removal (including root systems) should be performed. Buried tree debris should be completely removed beneath proposed building slab and footing locations. Topsoil should be stripped from the proposed building and pavement areas, and should be stockpiled and protected from erosion. Topsoil should be evaluated by a landscape architect for reuse in landscape areas if permitted by the environmental engineer. All clearing and stripping activities should be performed in strict accordance with the approved soil-erosion and sediment-control plan and the environmental reports prepared for the project.

All demolition and site-clearing work should be performed in accordance with any environmental requirements established for the site, and all local, state, and federal regulations. All debris and trees and other vegetation should be properly disposed of off site in accordance with applicable regulations. All construction work should be performed so as not to adversely impact the neighboring buildings, off site structures or utilities, including the existing utilities and trees that are to remain. Protection of these elements should be provided as necessary. Before beginning grading or placing fill, any miscellaneous trash, debris, or other unsuitable materials should be removed from the site.

Subgrade Preparation

All footing and utility-trench subgrades should be proofrolled with six overlapping coverages of a double-drum 1-ton walk-behind vibratory roller (such as a Bomag BW75 or equivalent). All slab subgrade areas should be proofrolled before placing any concrete or structural fill with six overlapping coverages of a vibratory drum roller having a minimum static drum weight of 5 tons.

Additional compaction should be performed as deemed necessary by a qualified Langan geotechnical engineer. Soft areas identified during proofrolling should be excavated and replaced with approved structural fill as described in the Removal and Replacement section. The actual extent of necessary removal and replacement should be determined by a qualified

Langan geotechnical engineer based on the actual field conditions encountered during construction. Care should be taken when proofrolling near any existing underground utilities that are to remain.

Soil footing subgrades should be excavated level and if any cobbles or boulders are encountered at the footing subgrade level such that a relatively level subgrade is not achieved, the cobbles or boulders should be removed and replaced with compacted structural fill, compacted ¾-inch crushed stone, or lean concrete. All soil subgrades for footings or slabs should be compacted to the project specified compaction criteria (i.e., 95% of the materials maximum dry density within plus or minus 2% of the material's optimum moisture content).

If foundations are not poured in a timely manner, consideration should be given to pouring a lean concrete mud mat to protect the footing subgrades.

Steps should be taken by the contractor to control surface-water runoff and to remove water from precipitation. When wet and subjected to construction traffic, previously acceptable subgrades can soften and become unacceptable. A smooth drum roller should be used to seal the surface and provide for better drainage. We also recommend crowning or sloping the subgrade to provide positive drainage off the subgrades.

Excavation, Fill, Placement, and Compaction Criteria

Excavation through the fill and the underlying varved silt and clay can likely be performed using conventional earthmoving equipment (e.g., backhoes, excavators, dozers, etc.). Excavations made for footings and utilities should be conducted to minimize disturbance to the subgrade (i.e., backhoe with a smooth-edge bucket).

All excavations should be properly sloped or braced and conform with applicable OSHA regulations including, but not limited to, temporary shoring, trench boxes, or proper benching or both.

All excavation and backfilling must be performed in accordance with the project environmental engineer's recommendations.

The following types of fill can be used.

> Structural Fill – Structural fill should be well-graded sand and gravel having a maximum particle size of 3 inches and no more than 10% passing the No. 200 sieve. Additionally, the structural fill should be free of organics, clay, roots, concrete, other nonsoil constituents, and other deleterious or compressible materials. Any approved imported structural fill should be "certified clean fill" free of hazardous substances and meeting all

local, state, federal and the Connecticut Department of Energy and Environmental Protection Soil Waste regulations.

Material Reuse – The contractor may reuse the on-site fill as structural fill provided the soils meet the requirements for structural fill outlined above and is approved by the environmental engineer. Note that samples obtained within the fill layers have a fines content (material passing the No. 200 sieve) of about 27%; therefore, the soil is likely sensitive to moisture. Additionally, given the site is currently developed, debris may be present in the fill that is unsuitable for re-use. The overall amount of soil that can be reused will be dependent on the amount of fines present within the soil, the time of year the earthwork is carried out (e.g., potentially inclement weather), and the earthwork contractor's ability to stage, aerate and process the material as necessary to facilitate placement and compaction. The varved silt and clay may not be re-used as structural fill.

General Fill – On-site soils not meeting the requirements for structural fill can be used as general fill for site landscape and other nonstructural areas (e.g., landscaped areas) if environmentally suitable for reuse. The fill and silt layers may be used as general fill, if required.

Compaction Criteria – All fill should be placed in uniform 12-inch-thick loose lifts and compacted. Fill in landscaped areas should be compacted to 90% of its maximum dry unit weight as determined by ASTM D1557; all other fill should be compacted to at least 95%. In restricted areas where only hand-operated compactors can be used, the maximum lift thickness should be limited to 8 inches. The appropriate water content at the time of compaction should be plus or minus 2% points of optimum as determined by the laboratory compaction tests of proposed fill. No backfill should be placed on areas where free water is standing or on frozen subsoil areas.

Temporary Groundwater Control

We anticipate that dewatering will be required during construction. Water infiltration to the foundation excavation and during the removal and replacement program can be controlled using gravity-fed sump pumps via gravel trenches or sumps assisted with collector trenches; however, the final dewatering measures required should be evaluated and designed by the contractor. Note based on available and our readings, the groundwater elevations fluctuate across the site throughout the year. The dewatering measures implemented should adequately dewater all foundation-related excavations such that compaction of footing subgrades is feasible.

Collection of rainwater runoff will also be needed during the excavation of the removal and replacement program and during the subgrade preparation work. Water runoff is expected to

be controlled with the use of gravel-lined collection trenches, pits and submersible pumps. Care should be taken to ensure that drainage is provided during all phases of excavation work. Environmental pretreatment of groundwater, if necessary, is beyond the scope of this report. Collected water should be discharged in accordance with applicable regulations.

Temporary Excavation Support

The contractor should take appropriate measures to stabilize the work area and prevent lateral movement of the adjacent streets, structures, buildings, the chimney, and utilities during excavation. Temporary excavation support systems such as soldier piling and wood lagging with steel bracing (i.e. wales, rakers, corner braces, etc.) or tie-backs have been used in similar subsurface conditions. The actual temporary excavation support system should be selected by the Contractor so as not to adversely impact off-site features or structures.

The existing chimney must be completely supported by the contractor's engineer throughout all phases of construction.

The temporary excavation support should be designed to resist earth pressures, hydrostatic pressures, pavement or other surcharges (i.e. traffic loads, adjacent structures, the existing chimney, etc.). The design of the temporary excavation support system should be such that movements are limited to tolerable levels and no adverse impact occurs to surrounding critical structures or features. The excavation support contractor should perform final design of the shoring system, including selection of the design wall pressure.

Before beginning the foundation work, the contractor should obtain information regarding the location, depths, and foundations associated with nearby structures, walls, the chimney, and utilities. The temporary excavation support system should be designed by the contractor's licensed Professional Engineer registered in the State of Connecticut.

We suggest early-phase discussion be held with a potential contractor during the design phase of this project.

Excavation will be required for construction components including the removal and replacement of existing fill, foundations, and utilities. Construction slopes should be excavated in accordance with all applicable OSHA, local, state, and federal regulations, including but not limited to proper benching and shoring.

Monitoring

We recommend that a monitoring program be developed and incorporated into the Contract Documents. Monitoring should include means to measure vibrations from construction

operations as well as structural and ground movement. The type and locations of specific monitoring equipment, threshold values, and durations should be developed based on review of the anticipated construction means and methods in conjunction with proximity and type of existing structures and utilities. The purpose of performing monitoring is to provide reasonable feedback to the contractor with respect to protecting existing structures and utilities, and to assess any necessary changes to means and methods of construction.

The existing chimney must be monitored throughout construction.

We recommend that a monitoring plan and project specifications be completed prior to construction. These would detail the methods and equipment required for monitoring vibration and movement, and would provide limits along with requirements for frequency of readings and reporting. The monitoring program would likely include optical surveying, seismographs (vibration monitoring), and crack gauges. We recommend that all monitoring be performed by a third-party consultant independent of the contractor; however, the contractor should reserve the right to perform additional monitoring. Monitoring should be performed throughout foundation construction. Threshold criteria should be developed during deign and coordinated with the structural engineer. Generally, vibrations should be limited to about 0.5 inches per second and optical surveying should be limited to about ¼-inch.

SERVICES DURING DESIGN, CONSTRUCTION DOCUMENTS AND CONSTRUCTION QUALITY ASSURANCE

During final design, Langan should be retained to consult with the design team as geotechnical questions arise. Technical specifications and design drawings should incorporate our recommendations. When authorized, we will assist the design team in preparing specification sections related to geotechnical issues such as earthwork, shallow foundations, backfill, underpinning, ground improvement, deep foundations, and excavation support. Langan should also, when authorized, review the project plans and contractor submittals relating to materials and construction procedures for geotechnical work to confirm the designs incorporate the intent of our recommendations.

Langan has explored and interpreted the site subsurface conditions and developed the foundation design recommendations contained here, and is therefore best suited to perform quality-assurance observation and testing of geotechnical-related work during construction. The work requiring quality-assurance confirmation or special inspections per the Building Code includes, but is not limited to earthwork, shallow foundations, backfill, underpinning, ground improvement, deep foundations, and excavation support.

Recognizing that construction observation is the final stage of geotechnical design, quality-assurance observation during construction by Langan is necessary to confirm the design

assumptions and design elements, to maintain our continuity of responsibility on this project, and allow us to make changes to our recommendations, as necessary. The foundation system and general geotechnical construction methods recommended herein are predicated upon Langan's assisting with the final design and providing construction observation services for the owner. If Langan is not retained for these services, we cannot assume the role of geotechnical engineer of record, and the entity providing the final design and construction observation services must serve as the engineer of record.

LIMITATIONS

The conclusions and recommendations provided in this report result from our interpretation of the geotechnical conditions existing at the site inferred from a limited number of borings and test pits as well as information. Actual subsurface conditions may vary. Recommendations provided are dependent upon one another and no recommendation should be followed independent of the others.

Any proposed changes in structures or their locations should be brought to Langan's attention as soon as possible so we can determine whether such changes affect our recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of our exploration. If different conditions are encountered during construction, they should immediately be brought to Langan's attention for evaluation because they might affect our recommendations.

This report has been prepared to assist the owner, architect, and structural engineer in the design process and is only applicable to the design of the specific project identified. The information in this report cannot be used or depended on by engineers or contractors involved in evaluations or designs of facilities (including underpinning, grouting, stabilization, etc.) on adjacent properties beyond the limits of that which is the specific subject of this report.

Environmental issues (such as permitting or potentially contaminated soil and groundwater) are outside the scope of this study and should be addressed in a separate evaluation.

CLOSING

We have appreciated being of service on this project, and look forward to working with you to successfully complete this project.

Sincerely,
Langan CT, Inc.

Clayton Patterson
Associate

Marc J. Gallagher, P.E., LEED AP
Senior Principal/Senior Vice President

cc: Nathan Kirschner (Langan), John Plante (Langan)

LHC:lhc/mjg/cp

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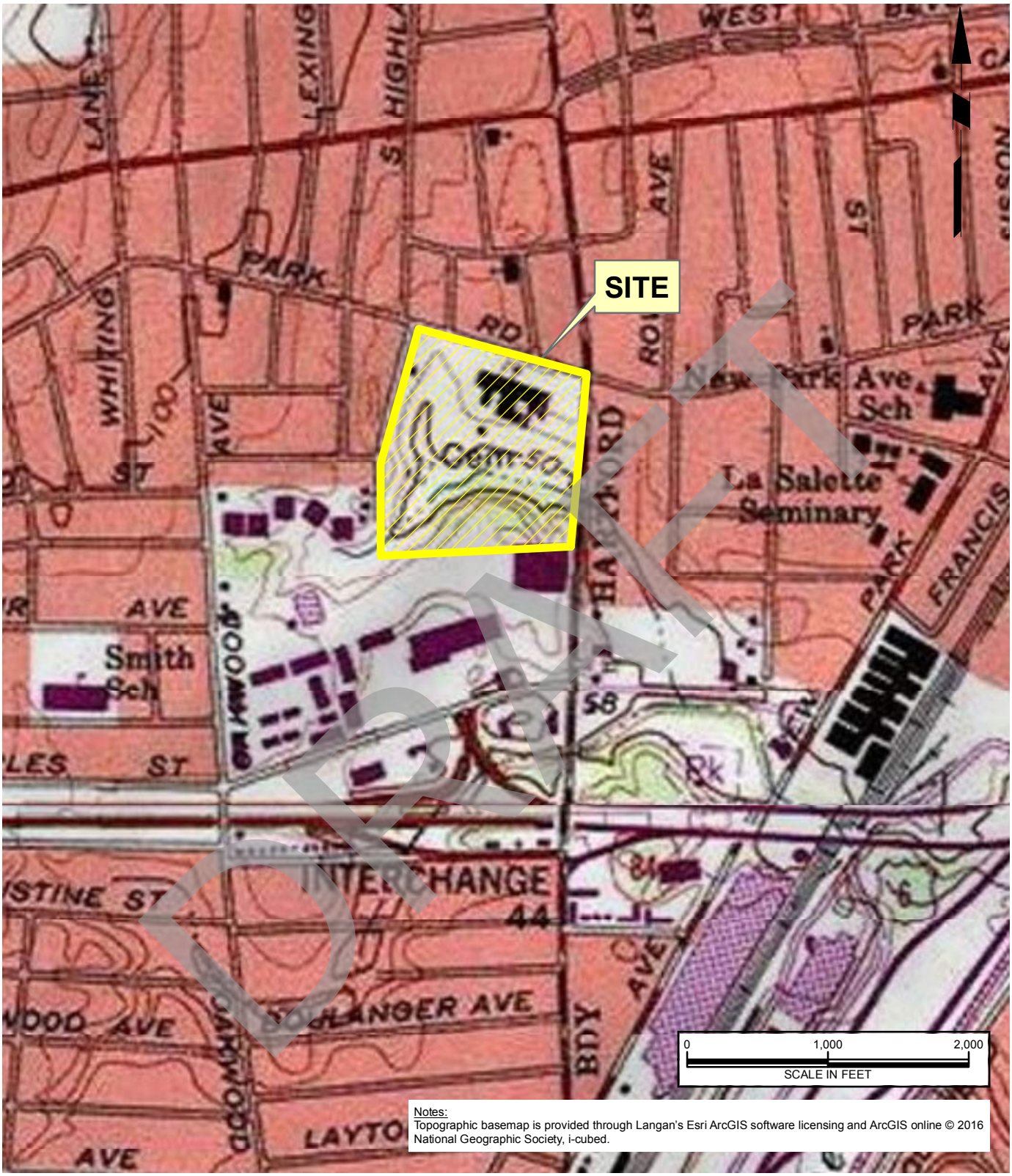
Attachments:

Figure 1	USGS Site Location Map
Figure 2	Surficial Material Map
Figure 3	Bedrock Geology Map
Figure 4	FEMA Flood Map
Figure 5	Exploration Location Plan
Appendix A	Available Information
Appendix B	Langan Boring Logs
Appendix C	Langan Test Pit Logs
Appendix D	Langan Test Pit Sketch – TP-04
Appendix E	Langan Test Pit Sketch – TP-05
Appendix F	Laboratory Testing Results

FIGURES



Notes:
Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online © 2016 National Geographic Society, i-cubed.

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Langan International LLC

Collectively known as Langan

Project
ONE PARK
27 PARK STREET
WEST HARTFORD

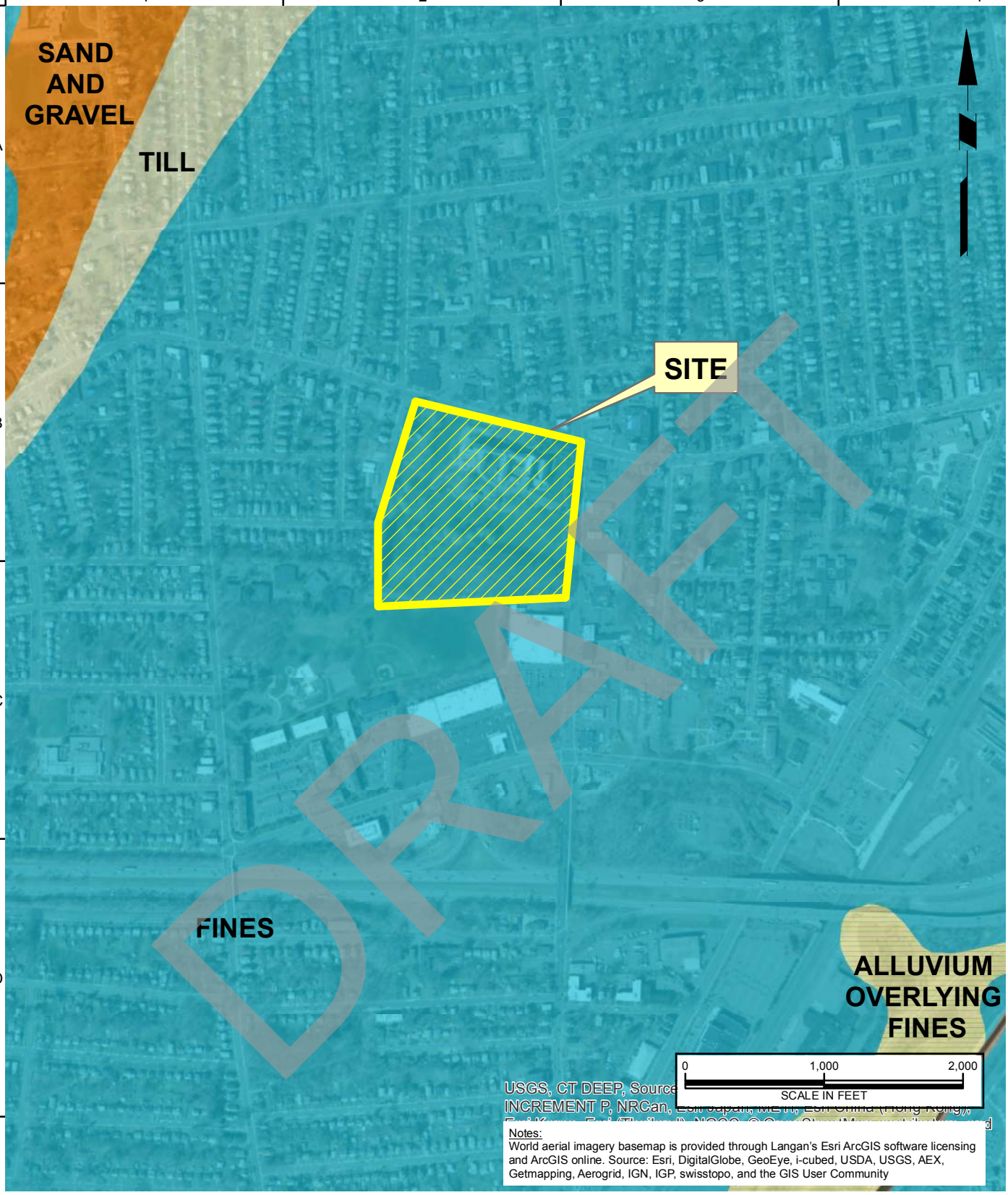
HARTFORD CONNECTICUT

Drawing Title
USGS SITE LOCATION MAP

Project No.	140184201
Date	6/4/2018
Scale	1' = 1,000'
Drawn By	OAC
Submission Date	

Figure 1

Path: \\langan.com\data\NHV\data2\140184201\Project Data_Discipline\Geotechnical\Reports\2018-06 Geotech Report\Figures\Back up\Figure 1 - Site Location Map.mxd Date: 6/5/2018 User: ochasse Time: 2:55:41 PM



Notes:
World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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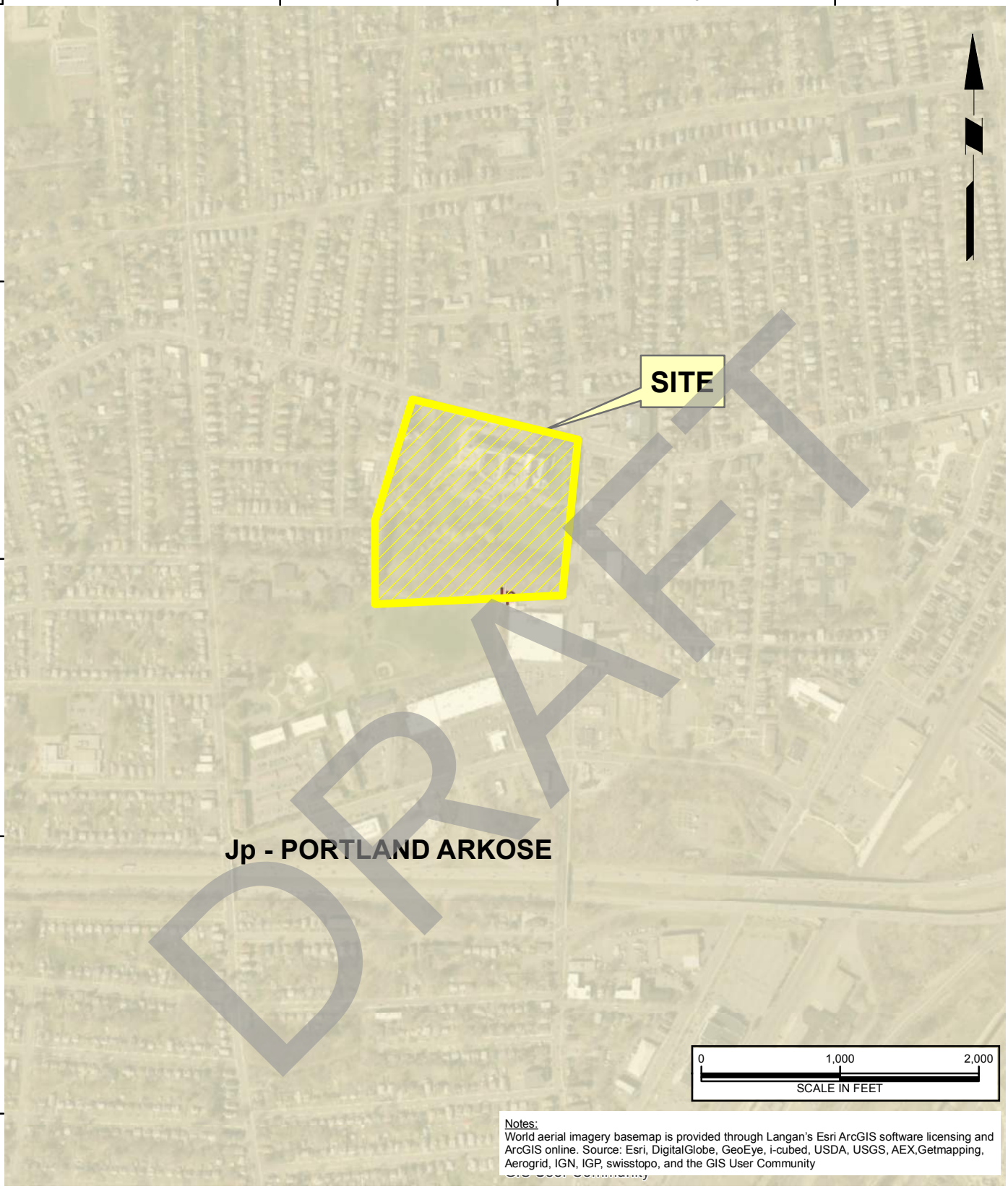
ONE PARK
27 PARK STREET
WEST HARTFORD
HARTFORD CONNECTICUT

Drawing Title
SURFICIAL MATERIAL MAP

Project No.	Figure
140184201	2
Date: 6/4/2018	
Scale: 1"=1,000'	
Drawn By: OAC	

Path: \\langan.com\data\NHV\data2\140184201\Project Data_Discipline\Geotechnical\Reports\2018-06 Geotech Report\Figures\Figure 2 - Suficial Material Map.mxd Date: 6/4/2018 User: ochasse Time: 2:53:51 PM



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27 PARK STREET
WEST HARTFORD
HARTFORD CONNECTICUT

Drawing Title
BEDROCK GEOLOGY MAP

Project No.	140184201
Date	6/4/2018
Scale	1" = 1000'
Drawn By	OAC
Figure	3

ZONE DESIGNATION	
ZONE X (UNSHADED)	AREA OUTSIDE OF THE 500 YEAR FLOOD
ZONE A (SHADED)	AREA SUBJECT TO 100 YEAR FLOOD

REFERENCE: MAP NUMBER 09003C0364F - REVISED SEPTEMBER 26, 2008

500 0 250 500

SCALE IN FEET

LANGAN

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Project

ONE PARK
27 PARK ROAD
WEST HARTFORD

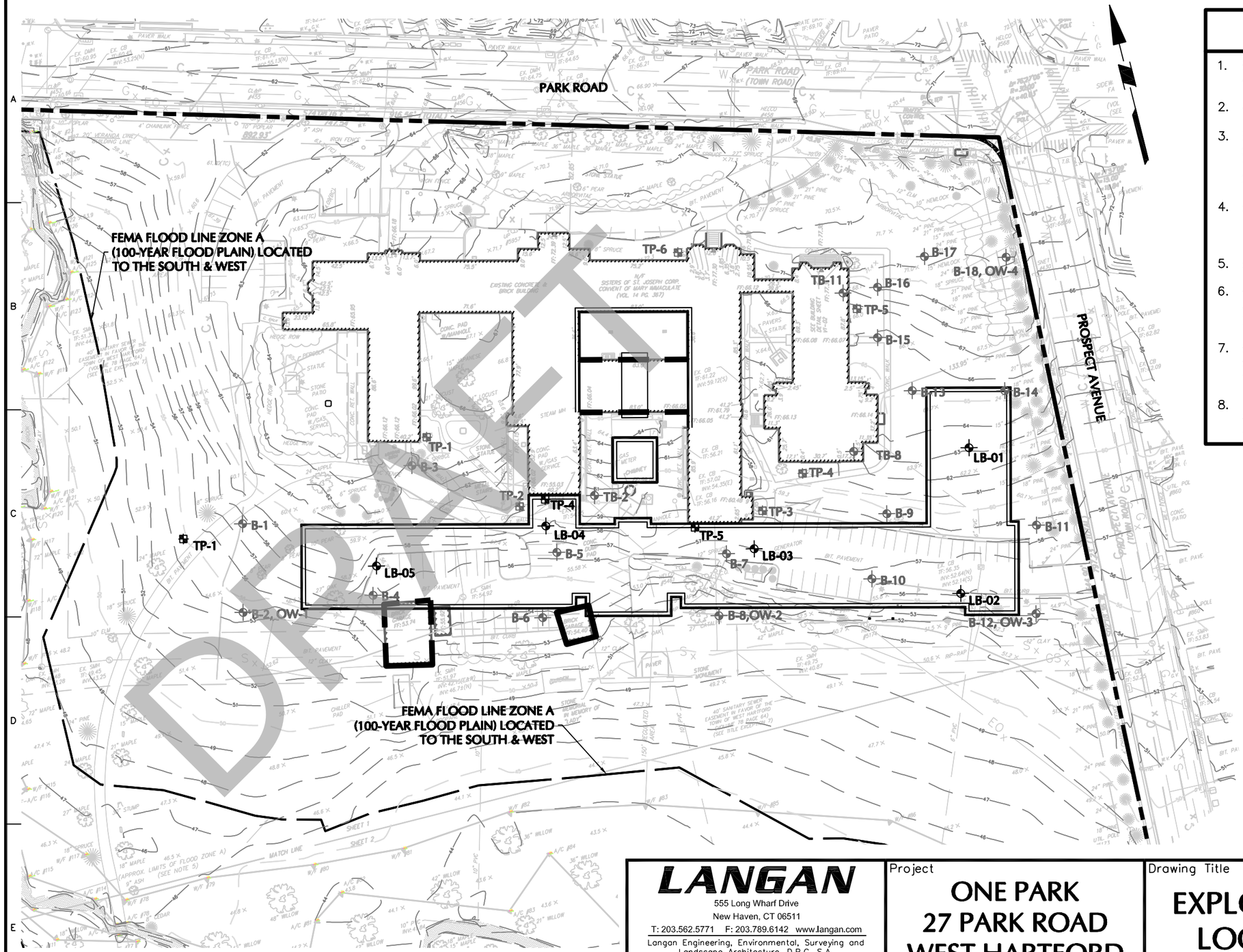
HARTFORD CONNECTICUT

Drawing Title

FEMA FLOOD MAP

Project No. 140184201	Drawing No. 4
Date 6/4/2018	
Scale 1"=500'	
Drawn By OAC	
Checked By LC	

Filename: \\langan.com\data\NHV\data2\140184201\Project Data\CAD\01\SheetFiles\Geotechnical\140128401-FEMA-Geotech.dwg Date: 6/4/2018 Time: 14:50 User: ochasse Style Table: Langan.stb Layout: FIG. 4



GENERAL NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION OBTAINED FROM A PLAN PREPARED BY DESIGN PROFESSIONALS.
2. ALL BORING AND TEST PIT LOCATIONS ARE APPROXIMATE.
3. SURVEY IS REFERENCED FROM PLAN TITLED "ARCADIA CROSSING RENOVATION AND ADDITION" DRAWN BY NORTHEAST COLLABORATIVE ARCHITECTS ON 15 JANUARY 2016.
4. EXISTING EXPLORATION LOCATIONS OBTAINED FROM THE PLAN TITLED "EXPLORATION LOCATION PLAN" BY GEI CONSULTANTS DATED JANUARY 2015.
5. ELEVATIONS REFERENCE NAVD 88
6. PROPOSED SITE AND BUILDING INFORMATION OBTAINED FROM A PLAN TITLED "SITE PLAN" PREPARED BY AMENTA EMMA, DATED 4 JANUARY 2018.
7. BORINGS LB-01 THROUGH LB-05 WERE DRILLED BY SITE LLC BETWEEN 24 MAY 2018 AND 30 MAY 2018, UNDER THE FULL-TIME OBSERVATION OF A LANGAN FIELD ENGINEER.
8. TEST PITS (TP-01, TP-04, TP-05) WERE PERFORMED BY POLSTER INDUSTRIES LLC ON 29 MAY 2018, UNDER THE FULL-TIME OBSERVATION OF A LANGAN FIELD ENGINEER.

LEGEND

- BORING BY OTHERS
- TEST PIT BY OTHERS
- BORING BY LANGAN
- TEST PIT BY LANGAN
- PROPERTY LINE
- EXISTING BUILDING
- PROPOSED BUILDING
- EXISTING BUILDING TO BE DEMOLISHED

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Project
ONE PARK
27 PARK ROAD
WEST HARTFORD
WEST HARTFORD CONNECTICUT

Drawing Title
EXPLORATION LOCATION PLAN

Project No. 140184201	Drawing No. 5
Date 6/04/2018	
Scale 1"=80'	
Drawn By OAC / Checked By LC	
Submission Date –	Sheet of

Filename: \\langan.com\data\NHV\data2\140184201\Project Data\CAD\01\SheetFiles\Geotechnical\140184201-BL101-0101 REVISED.dwg Date: 7/5/2018 Time: 15:19 User: zroller Style Table: Langan.stb Layout: ANSIB-BL

APPENDIX A
AVAILABLE INFORMATION

BORING INFORMATION

LOCATION: See Fig. 2

GROUND SURFACE EL. (ft): 57.5 **DATE START/END:** 1/6/2015 - 1/6/2015

VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

TOTAL DEPTH (ft): 25.8 **DRILLER NAME:** T. McGovern

LOGGED BY: A. Hernberg **RIG TYPE:** Mobile Drill International B53 Truck Rig

BORING B-1

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer **CASING I.D./O.D.:** NA/ NA **CORE BARREL TYPE:** NA

AUGER I.D/O.D.: 3.25 inch / 5 inch **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA

DRILLING METHOD: Hollow Stem Auger

WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/13	4-3-8-12			0-2": TOPSOIL. S-1A (0.3-0.9'): SILTY SAND (SM); ~60% fine sand, ~40% low plasticity fines, brown, moist, trace roots and brick. FILL.
		S-2	2 to 4	24/24	8-9-12-19			S-1B (0.9-2'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~95% low plasticity fines, ~5% fine sand, moist, gray and reddish-brown. S-2 (2-4'): Similar to S-1B; varves ranging ~1/16" to 1/2" thick.
	5	S-3	4 to 6	24/24	5-8-9-16			S-3 (4-6'): Similar to S-1B; varves up to 2" thick.
		S-4	6 to 8	24/24	13-13-13-17			S-4 (6-8'): Similar to S-1B; varves up to 2" thick. LL = 52%, PL = 26%.
48	10	S-5	10 to 12	24/24	1-4-5-9			S-5 (10-12'): Similar to S-1B; varves up to 2" thick.
	15	S-6	15 to 17	24/24	1-2-3-6			S-6 (15-17'): Similar to S-1B; varves up to 2" thick, wet.

NOTES:

PROJECT NAME: Arcadia Crossing

CITY/STATE: West Hartford, Connecticut

GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 57.5 **DATE START/END:** 1/6/2015 - 1/6/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-1

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	2-2-4-6			S-7A (20-21.5'): FAT CLAY (CH); ~95% medium to high plasticity fines, ~5% fine sand, reddish-brown, wet.
								S-7B (21.5-22'): FAT CLAY (CH); ~50% fine to coarse sand, ~50% medium to high plasticity fines, reddish-brown, wet.
						Stiffer soil noted at 24'.		
	25	S-8	25 to 25.8	10/6	12-50/4"			S-8 (25-27'): SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~25% medium plasticity fines, ~25% fine to coarse gravel, maximum size 1", reddish-brown, wet. GLACIAL TILL.
								End of boring at 25.8'. Backfill with cuttings and sand.
28	30							
	35							
18	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 25.9
LOGGED BY: A. Hernberg
DATE START/END: 1/6/2015 - 1/6/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING B-2

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA
WATER LEVEL DEPTHS (ft): ▼ 6.0 1/22/2015 7:15 am measured in OW-1

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/4	3-4-5-12			0-2": TOPSOIL. S-1 (0.2-2'): NO RECOVERY; Rock piece stuck in spoon tip. FILL.
		S-2	2 to 4	24/18	6-5-7-11			S-2A (2-2.2'): SILTY SAND (SM); ~60% fine to medium sand, ~40% low plasticity fines, brown, moist, trace organics. FILL. S-2B (2.2-4'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~85% low to medium plasticity fines, ~15% fine sand, reddish-brown and gray with dark gray blotches, moist, varves of clay up to 2" thick.
	5	S-3	4 to 6	24/18	5-6-8-9			S-3 (4.4-6'): Similar to S-2B; ~90% fines, ~10% fine sand, wet, varves vary from 1/4" to 3" thick.
		S-4	6 to 8	24/24	8-8-9-7			S-4 (6-8'): Similar to S-3; varves of clay and silt ~1" thick.
44	10	S-5	10 to 12	24/21	1-2-3-5			S-5 (10-12'): SANDY FAT CLAY AND SANDY SILT (CH & ML); Varves of silt (~70% fines, ~30% fine sand) and high-plasticity clay (~100% fines), gray and reddish-brown, wet. Varves 1/2" to 2" thick.
	15	S-6	15 to 17	24/18	2-4-6-14	Change in drilling noted at 17'.		S-6A (15-15.2'): Similar to S-5. S-6B (15.2-16.8'): FAT CLAY (CH); ~95% medium to high plasticity fines, ~5% fine sand, reddish-brown, wet. S-6C (16.8-17'): SANDY FAT CLAY (CH); ~70% medium plasticity fines, ~25% fine to coarse sand, ~5% fine gravel, maximum size 1/4", reddish-brown, wet.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54 **DATE START/END:** 1/6/2015 - 1/6/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-2

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/17	3-7-7-9			S-7 (20-22'): Similar to S-6C; maximum size 1/2".
	25	S-8	25 to 25.9	11/11	22-100/5"	More difficult drilling noted at 24'.		S-8 (25-27'): WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to coarse sand, ~30% fine to coarse gravel, ~10% fines, reddish-brown, moist. GLACIAL TILL.
24	30							End of boring at 25.9'. Install monitoring well OW-1.
	35							
14	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 61.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/14/2015 - 1/14/2014
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-3

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-3": ASPHALT.
		S-1	1 to 3	24/10	14-17-10-9			S-1 (1-3'): NARROWLY GRADED SAND WITH GRAVEL (SP); ~80% mostly fine sand, ~15% fine to coarse gravel, maximum size 1.25", ~5% fines, brown to red, wet. FILL.
		S-2	3 to 5	24/17	5-6-9-20			S-2A (3-3.3'): Similar to S-1.
								S-2B (3.3-5'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low to medium plasticity fines, gray and brown, moist to wet, varves ~1/8" thick.
	5	S-3	5 to 7	24/24	3-4-18-20			S-3 (5-7'): Similar to S-2B. Contains micro seams of fine sand and silt, varves ~1/8 to 1/4" thick.
		S-4	7 to 9	24/20	8-11-15-17			S-4 (7-9'): Similar to S-2B, grayish-brown to reddish-brown, contains micro seams of fine sand and silt, varves ~1/8 to 1/4" thick.
52	10	S-5	10 to 12	24/24	4-4-6-9			S-5 (10-12'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, grayish-brown to reddish-brown, moist to wet, contains micro seams of fine sand and silt, varves ~1/8 to 1/4" thick.
	15	S-6	15 to 17	24/24	2-1-1-2			S-6 (15-17'): FAT CLAY AND SILT (CH & ML); Varves of silt (~90% fines, ~10% fine sand) and high-plasticity clay (~100% fines), gray and reddish-brown, wet. Varves ~1/8" to 3" thick. LL = 57%, PL = 26%.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 61.5 **DATE START/END:** 1/14/2015 - 1/14/2014
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-3

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-1-1-1			S-7 (20-22'): Similar to S-6. Varves ~1" thick.
	25	S-8	25 to 27	24/24	1-1-2-5			S-8 (25-27'): Similar to S-6. Varves ~1" thick. Varves of silt contain ~30% fine sand.
								End of boring at 27'. Backfill with cuttings. Patch with asphalt cold patch.
32	30							
	35							
22	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 55.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/6/2015 - 1/6/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-4

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-3": ASPHALT.
		S-1	1 to 3	24/12	17-9-11-12			S-1A (1-1.2'): WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM); ~65% fine to coarse gravel, maximum size 1", ~25% fine to coarse sand, ~10% fines, brown, trace bricks. FILL.
		S-2	3 to 5	24/19	13-18-23-29			S-1B (1.2-3'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% fines, gray and brown, moist, micro seams of fine sand and silt. S-2 (3-5'): Similar to S-1B. 99.4% fines, 0.6% fine sand.
	5	S-3	5 to 7	24/23	6-12-12-17			S-3 (5-7'): Similar to S-1B; varves of reddish-brown clay ~1/4" thick.
		S-4	7 to 9	24/23	17-17-16-20			S-4 (7-9'): Similar to S-1B; gray to reddish-brown, varves of brown silty sand with gravel (~70% fine to medium sand, ~40% fine gravel, maximum size 1/4", ~20% fines) from 7.2-7.3'.
46	10	S-5	10 to 12	24/24	2-4-4-6			S-5 (10-12'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); varves of gray silt (~70% fines, ~30% fine sand) and reddish-brown high-plasticity clay (~100% fines), wet.
	15	S-6	15 to 17	24/21	2-2-4-6			S-6 (15-17'): Similar to S-5; wet.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 55.5 **DATE START/END:** 1/6/2015 - 1/6/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-4

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	2-2-2-4			S-7 (20-22'): Similar to S-5; wet.
	25	S-8	25 to 27	24/24	4-3-1-7			S-8 (25-27'): FAT CLAY (CH); ~95% medium to high plasticity fines, ~5% fine sand, reddish-brown, wet.
26	30							End of boring at 27'. Backfill with cuttings and sand. Patch with asphalt cold patch.
	35							
16	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 47.0
LOGGED BY: A. Hernberg
DATE START/END: 1/7/2015 - 1/14/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern and J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-5

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-3": ASPHALT.
		S-1	1 to 3	24/14	10-12-16-23			S-1A (1-1.9'): NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); ~60% fine to medium sand, ~30% fine to coarse gravel, maximum size 1", ~10% fines, brown, moist. FILL.
		S-2	3 to 5	24/3	21-19-23-35			S-1B (1.9-3'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low to medium plasticity fines, gray and brown, moist, varves ~1/8" thick. S-2 (3-5'): Similar to S-1B. Contains micro seams of fine sand and silt spaced ~1/8".
	5	S-3	5 to 7	24/0	19-22-21-24			S-3 (5-7'): No recovery.
		S-4	7 to 9	24/16	8-16-15-11			S-4 (7-9'): Similar to S-1B. Gray and reddish-brown, moist to wet. Trace 1/8" thick dark gray gravel pieces, size of the spoon.
47	10	S-5	10 to 12	24/24	3-4-5-10			S-5 (10-12'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, reddish-brown and gray, wet. Varves ~1/8 to 1/2" thick.
	15	S-6	15 to 17	24/24	WOH-WOH-3-5			S-6 (15-17'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~95% medium to high plasticity fines, ~5% fine sand, reddish-brown and gray, wet. Varves ~1" thick. ~1/2" thick varves of sandy silt (~70% silt, ~30% fine sand) spaced every ~1 to 3".

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5 **DATE START/END:** 1/7/2015 - 1/14/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-5

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-WOH-WOH-1			S-7 (20-22'): Similar to S-6.
	25	S-8	25 to 27	24/24	2-3-6-8			S-8 (25-27'): Similar to to S-6. ~90% fines, ~10% fine sand. Alternating varves of clay and sandy silt. 1/4" gravel piece at 26.5'.
27	30	S-9	30 to 32	24/24	WOH-WOH-WOH-2			S-9 (30-32'): Similar to to S-6. ~90% fines, ~10% fine sand. Alternating varves of clay and sandy silt.
	35	S-10	35 to 37	24/14	WOH-WOH-1-1			S-10 (35-37'): FAT CLAY AND SILT (CH & ML); Similar to S-6, mostly high plasticity fines. Varves of sandy silt spaced every ~3 to 10".
17	40	S-11	40 to 42	24/24	WOR-WOR-1-4	Stiffer soil noted at 42.5'.		S-11A (40-41.3'): FAT CLAY (CH); 87.1% medium to high plasticity fines, 8.9% fine gravel, 4.0% fine sand, red, very wet. S-11B (41.3-42'): SANDY FAT CLAY (CH); ~60% high plasticity fines, ~35% fine to coarse sand, mostly fine, ~5% fine gravel, red, wet.
	45	S-12	45 to 47	24/12	15-50-49-37			S-12 (45-47'): SILTY SAND WITH GRAVEL (SM); ~50% fine to coarse sand, ~30% fine to coarse gravel, maximum size 1.25", ~20% fines, red, wet. GLACIAL TILL.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5 **DATE START/END:** 1/7/2015 - 1/14/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-5

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								End of boring at 47'. Backfill with cuttings. Patch with asphalt cold patch.
7	50							
	55							
-4	60							
	65							
-14	70							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/13/2015 - 1/14/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-6

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-3": ASPHALT.
		S-1	1 to 3	24/1	26-12-6-5			S-1 (1-3'): WIDELY GRADED GRAVEL (GW); ~90% fine to coarse gravel, maximum size 1", ~10% fine to coarse sand, brown, wet. FILL.
		S-2	3 to 5	24/9	6-8-14-17			S-2A (3-4.6'): SILTY SAND WITH GRAVEL (SM); 47.9% fines, 33.4% fine to medium sand, 18.7% fine gravel, brown, wet. FILL.
	5	S-3	5 to 7	24/0	9-17-20-24			S-2B (4.6-5'): SILT (ML); ~90% low plasticity fines, ~10% fine sand, grayish-brown, moist. ALLUVIUM. S-3 (5-7'): No recovery.
		S-4	7 to 9	24/15	10-17-24-28			S-4 (7-9'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low to medium plasticity fines, gray, reddish-brown, and brown, moist. Varves ~1/8" thick.
44	10	S-5	10 to 12	24/24	4-7-11-12			S-5 (10-12'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); Similar to S-4, medium to high plasticity fines, gray and reddish-brown, wet. Varves ~1/8" to 1" thick.
	15	S-6	15 to 17	24/24	1-2-4-5			S-6 (15-17'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); Similar to S-4, medium to high plasticity fines, gray and reddish-brown, wet. Varves ~1/4" to 1" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54
VERTICAL DATUM: NAVD 88
DATE START/END: 1/13/2015 - 1/14/2015
DRILLING COMPANY: General Borings, Inc.

BORING B-6

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-WOH-1-2			S-7 (20-22'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); Similar to S-4, medium to high plasticity fines, gray and reddish-brown, wet. Varves ~1/4" to 1" thick.
	25	S-8	25 to 27	24/24	WOH-3-5-6			S-8 (25-27'): LEAN TO FAT CLAY AND SILT (CL-CH & ML); Similar to S-4, medium to high plasticity fines, gray and reddish-brown, wet. Varves up to ~3" thick. ~1/4 to 1" thick varves of sandy silt (~70% fines, ~30% fine sand) spaced at ~6 to 10".
24	30							End of boring at 27'. Backfill with cuttings. Patch with asphalt cold patch.
	35							
14	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/7/2015 - 1/7/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-7

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-6": ASPHALT.
		S-1	1 to 3	24/5	21-26-18-12			S-1 (1-3'): NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); ~70% fine to medium sand, ~20% fine to coarse gravel, maximum size of the spoon, ~10% fines, red, dry to moist, contains asphalt fragments. FILL.
		S-2	3 to 5	24/11	7-9-9-12			S-2A (3-3.7'): NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM); Similar to S-1. FILL.
	5	S-3	5 to 7	24/10	6-10-18-17			S-2B (3.7-5'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% low plasticity fines, ~5% fine sand, brown and gray, moist. S-3 (5-7'): Similar to S-2B.
		S-4	7 to 9	24/0	15-16-23-26			S-4 (7-9'): No recovery.
47	10	S-5	10 to 12	24/24	6-9-14-18			S-5 (10-12'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low plasticity fines, brown and gray, moist.
	15	S-6	15 to 17	24/24	1-2-3-5			S-6 (15-17'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, gray and reddish-brown, very wet. Varves of clay are up to 3" thick, varves of silt are up to 1" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5 **DATE START/END:** 1/7/2015 - 1/7/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-7

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	1-1-1-1			S-7 (20-22'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~90% medium to high plasticity fines, ~10% fine sand, gray and reddish-brown, very wet. Varves of silt and fine sand are ~1" thick, varves of clay are ~1-2" thick.
	25	S-8	25 to 27	24/24	1-2-3-4			S-8 (25-27'): Similar to S-7.
27	30							End of boring at 27'. Backfill with cuttings and sand. Patch with asphalt cold patch.
	35							
17	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 51
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/13/2015 - 1/13/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-8

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA
WATER LEVEL DEPTHS (ft): ▼ 5.9 1/11/2015 12:55 pm ▼ 4.9 1/22/2015 7:20 am measured in OW-2

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/11	5-5-4-4			S-1A (0-0.7'): TOPSOIL.
								S-1B (0.7-2'): SANDY SILT (ML); ~60% low plasticity fines, ~40% fine sand, trace roots, brown, wet. ALLUVIUM.
		S-2	2 to 4	24/14	5-5-9-6			S-2 (2-4'): Similar to S-1B.
	5	S-3	4 to 6	24/21	4-6-10-11			S-3 (4-6'): SILT WITH SAND (ML); ~80% low plasticity fines, ~20% fine sand, trace roots, brown and gray, moist. ALLUVIUM.
		S-4	6 to 8	24/20	4-6-11-12			S-4A (6-7.6'): Similar to S-3; no roots observed.
								S-4B (7.6-8'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low plasticity fines, gray and brown, moist. Clay varves ~1/4" thick separated by silt micro-seams.
41	10	S-5	10 to 12	24/24	3-5-5-4			S-5 (10-12'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~100% medium to high plasticity fines, gray and reddish-brown, moist to wet. Varves up to ~3" thick.
	15	S-6	15 to 17	24/24	1-1-1-2			S-6 (15-17'): Similar to S-5; wet. Clay varves ~1/4 to 3" thick with ~1/4" silt/ f sand (70%/30%) varves spaced at ~8 to 10".

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 51 **DATE START/END:** 1/13/2015 - 1/13/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-8

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-1-1-2			S-7 (20-22'): Similar to S-5; wet. ~1/4" silt/ f sand varves spaced at ~4 to 8".
	25	S-8	25 to 27	24/24	WOH-WOH-1-2			S-8 (25-27'): Similar to S-5; wet. Silt and clay varves ~1" thick.
21	30							End of boring at 27'. Install monitoring well OW-2.
	35							
11	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 59
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 48.0
LOGGED BY: A. Hernberg
DATE START/END: 1/12/2015 - 1/13/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-9

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/11	5-7-6-8			S-1A (0-0.7'): TOPSOIL. S-1B (0.7-2'): SANDY SILT (ML); ~60% low plasticity fines, ~30% fine sand, ~10% fine gravel, max. size 1/2", brown and red, wet. FILL.
		S-2	2 to 4	24/24	5-11-12-16			S-2A (2-2.8'): SILTY SAND (SM); ~60% f-c sand, ~30% low plasticity fines, ~10% fine gravel, max. size 1/4", brown, wet. FILL.
		S-3	4 to 6	24/18	4-5-8-12			S-2B (2.8-4'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~100% low plasticity fines, brown to gray, moist. Varves ~1/8" thick. S-3 (4-6'): Similar to S-2B; wet. LL = 56%, PL = 26%.
	5	S-4	6 to 8	24/24	7-12-14-13			S-4 (6-8'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~100% medium plasticity fines, brown to gray, wet. ~1/2" piece of gravel at 12".
49	10	S-5	10 to 12	24/24	2-3-4-7			S-5 (10-12'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~100% medium to high plasticity fines, gray to reddish-brown, wet. Varves ~1/4" thick.
	15	S-6	15 to 17	24/24	1-1-2-3			S-6 (15-17'): Similar to S-5; clay varves up to ~2" thick with ~1/4" thick ~70% silt and ~30% fine sand varves spaced every ~6-10".

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 59 **DATE START/END:** 1/12/2015 - 1/13/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-9

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-WOH-2-3			S-7 (20-22'): Similar to S-6; silt/sand varves up to 1.5" thick.
	25	S-8	25 to 27	24/24	WOH-1-2-3			S-8 (25-27'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~95% medium to high plasticity fines, ~5% fine sand, gray to reddish-brown, wet. Varves of silt/sand spaced every ~4".
29	30	S-9	30 to 32	24/24	WOH-WOH-WOH-1			S-9 (30-32'): Similar to S-8.
	35	S-10	35 to 37	24/24	1-3-7-5	Stiffer soil noted at 37.5'.		S-10 (35-37'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~95% high plasticity fines, ~5% fine sand, gray to reddish-brown, wet. ~2" thick varves of ~50% f sand and ~50% silt at bottom of spoon.
19	40	S-11	40 to 42	24/8	22-18-19-21			S-11 (40-42'): SILTY SAND WITH GRAVEL (SM); 43.9% f-c sand, 31.6% fine gravel, maximum size 3/4", 24.5% fines, red, wet. GLACIAL TILL.
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 59 **DATE START/END:** 1/12/2015 - 1/13/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-9

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-12	46 to 48	24	26-50-44-39			S-12 (46-48'): Similar to S-11; max. size ~1.25". Possible decomposed rock in spoon tip.
								End of boring at 48'. Backfill with cuttings.
9	50							
	55							
-1	60							
	65							
-11	70							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/7/2015 - 1/7/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-10

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
								0-4": ASPHALT.
		S-1	1 to 3	24/13	28-38-11-10			S-1A (1-2.7'): SILTY SAND WITH GRAVEL (SM); ~40% fine to coarse gravel, maximum size 1", ~40% fine to coarse sand, ~20% fines, red, dry to moist. FILL.
		S-2	3 to 5	24/3	7-10-16-21			S-1B (2.7-3'): VARVED DEPOSITS: SILT (ML); ~100% low plasticity fines, gray and brown, moist. S-2 (3-5'): Similar to S-1B.
	5	S-3	5 to 7	24/17	6-11-21-30			S-3 (5-7'): Similar to S-1B.
		S-4	7 to 9	24/15	12-16-26-27			S-4 (7-9'): Similar to S-1B; micro seams of silt and very fine sand.
47	10	S-5	10 to 12	24/24	4-7-11-12			S-5 (10-12'): Similar to S-1B; trace gravel, micro seam sof silt and very fine sand.
	15	S-6	15 to 17	24/24	1-1-2-4			S-6 (15-17'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~95% medium to high plasticity fines, ~5% fine sand, reddish-brown and gray, very wet. Varves of clay ~1/4" to 2" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 56.5 **DATE START/END:** 1/7/2015 - 1/7/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-10

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24	1-1-3-5			S-7 (20-22'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~90% medium to high plasticity fines, ~10% fine sand, gray and reddish-brown, very wet. Varves of silt and fine sand are up to ~1" thick.
	25	S-8	25 to 27	24/24	1-2-2-3			S-8 (25-27'): Similar to S-7; varves of silt and fine sand are up to 2" thick.
27	30							End of boring at 27'. Backfill with cuttings and sand. Patch with asphalt cold patch.
	35							
17	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 58.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/6/2015 - 1/7/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: T. McGovern
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-11

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D./O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/16	2-6-8-14			S-1A (0-0.8'): TOPSOIL; ~80% fine to medium sand, ~20% fines, brown, moist, organic-like odor, contains roots, grass, leaves. S-1B (0.8-2'): SILTY SAND (SM); ~60% fine sand, ~40% fines, brown, gray, and tan, moist, trace organics. ALLUVIUM.
		S-2	2 to 4	24/21	10-20-17-17			S-2 (2-4'): SILT (ML); 98.7% fines, 1.0% fine sand, 0.3% fine gravel, mottled gray, brown, and black, moist, trace organics. ALLUVIUM.
	5	S-3	4 to 6	24/23	6-17-24-26			S-3 (4-6'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML): ~100% fines, gray to brown, moist, micro seams of silt and fine sand. 3/4" piece of gravel at 5.1'.
		S-4	6 to 8	24/22	7-12-12-19			S-4 (6-8'): Similar to S-3, no gravel.
49	10	S-5	10 to 12	24/24	2-3-6-8			S-5 (10-12'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML): ~100% fines, gray to reddish-brown, top 12" moist, bottom 12" wet, micro seams of silt and fine sand.
	15	S-6	15 to 17	24/24	1-1-3-5			S-6 (15-17'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~100% high plasticity fines, trace fine gravel, gray and reddish-brown, wet, maximum size 1/2".

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 58.5 **DATE START/END:** 1/6/2015 - 1/7/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-11

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	1-1-2-3			S-7 (20-22'): Similar to S-6; mostly high plasticity clay, varves up to 4" thick.
	25	S-8	25 to 27	24/24				S-8 (25-27'): Similar to S-6.
								End of boring at 27'. Backfill with cuttings and sand.
29	30							
	35							
19	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/13/2015 - 1/13/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-12

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA
WATER LEVEL DEPTHS (ft): ▼ 8.1 1/22/2015 2:30 pm measured in OW-3

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/13	4-3-5-6			S-1 (0-2'): SILTY SAND (SM); ~60% fine sand, ~40% low plasticity fines, trace roots, brown, moist to wet. TOPSOIL.
		S-2	2 to 4	24/21	7-12-15-16			S-2A (2-3'): SANDY SILT (ML); ~60% low plasticity fines, ~40% fine sand, trace roots, brown to gray, wet. ALLUVIUM.
	5	S-3	4 to 6	24/14	7-14-22-23			S-2B (3-4'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low plasticity fines, brown and gray, moist. Clay varves ~1/8" thick with silt micro-seams. S-3 (4-6'): Similar to S-2B; clay varves ~1/8 to 1/4" thick with silt micro-seams.
		S-4	6 to 8	24/18	9-15-19-22			S-4 (6-8'): Similar to S-2B; ~100% low to medium plasticity fines. Clay varves ~1/8" thick with silt micro-seams.
45	10	S-5	10 to 12	24/24	3-5-7-8			S-5 (10-12'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~100% medium to high plasticity fines, gray to reddish-brown, wet. Clay varves ~1/4" thick with silt/ fine sand micro-seams. Single ~1/4" piece of gravel at 5".
	15	S-6	15 to 17	24/24	WOH-1-3-4			S-6 (15-17'): Similar to S-5; varves ~1.0" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 54.5 **DATE START/END:** 1/13/2015 - 1/13/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-12

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	1-2-2-2			S-7 (20-22'): Simlar to S-5; clay varves with ~1.0" varves of ~50% silt/ f sand every ~6".
	25	S-8	25 to 27	24/24	1-1-3-3			S-6 (15-17'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~100% high plasticity fines, gray to reddish-brown, wet. After 18", clay varves ~2" thick alternate with ~1" silt/ f sand varves.
25	30							End of boring at 27'. Install monitoring well OW-3.
	35							
15	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 65.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/9/2015 - 1/9/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-13

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/10	2-5-10-11			S-1A (0-0.8'): TOPSOIL.
								S-1B (0.8-2'): SILT (ML); ~90% low plasticity fines, ~10% fine sand, mottled coloring with gray/ tan/ brown, moist. ALLUVIUM.
		S-2	2 to 4	24/24	11-11-12-12			S-2 (2-4'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low plasticity fines, gray and brown, moist. Varves ~1/8" thick.
	5	S-3	4 to 6	24/24	4-6-8-8			S-3 (4-6'): Similar to S-2; ~100% low to medium plasticity fines, wet.
		S-4	6 to 8	24/24	9-10-10-10			S-4 (6-8'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% low to medium plasticity fines, ~5% fine sand, brown to reddish brown, wet. Micro-varves of f sand spaced every ~1/4", varves of CL and ML range ~1/8-1/4" thick.
56	10	S-5	10 to 12	24/24	2-4-6-6			S-5 (10-12'): Similar to S-4; micro-varves contain both fine sand and silt.
	15	S-6	15 to 17	24/24	1-1-3-4			S-6 (15-17'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, gray and reddish brown, very wet. Varves range in thickness from 1/2" to 1".

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 65.5 **DATE START/END:** 1/9/2015 - 1/9/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-13

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	1-2-4-4			S-7 (20-22'): Similar to S-6; Clay varves up to ~3" thick.
	25	S-8	25 to 27	24/24	WOH-1-3-3			S-8 (25-27'): Similar to S-6; ~1/2" varves of ~70% silt and ~30% fine sand spaced every ~6".
								End of boring at 27'. Backfill with cuttings.
36	30							
	35							
26	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 65.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/9/2015 - 1/9/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-14
PAGE 1 of 2

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/8	7-3-8-10			S-1A (0-0.8'): TOPSOIL.
		S-2	2 to 4	24/23	8-12-14-14			S-1B (0.8-2'): LEAN CLAY WITH SAND (CL); ~80% medium plasticity fines, ~20% fine sand, brown and gray, moist. ALLUVIUM. S-2 (2-4'): Similar to S-1B. LL= 49%, PL =24%.
	5	S-3	4 to 6	24/24	2-6-8-9			S-3 (4-6'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% low to medium plasticity fines, ~5% fine sand, brown to gray, moist to wet. ~1/8" thick varves of fine sand every ~1/8" of sample.
		S-4	6 to 8	24/24	8-10-11-12			S-4 (6-8'): Similar to S-3; wet.
56	10	S-5	10 to 12	24/24	2-4-4-6			S-5 (10-12'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~95% medium to high plasticity fines, ~5% fine sand, brown to gray, wet. ~1/8" thick varves of fine sand every ~1/8" of sample.
	15	S-6	15 to 17	24/24	1-2-2-4			S-6 (15-17'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, gray and reddish-brown, wet. Varves range from 1-3" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 65.5 **DATE START/END:** 1/9/2015 - 1/9/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-14

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-1-4-4			S-7 (20-22'): Similar to S-6.
	25	S-8	25 to 27	24/24	WOH-WOH-2-3			S-8 (25-27'): Similar to S-6; ~100% high plasticity fines. Clay varves up to 5" thick.
								End of boring at 27'. Backfill with cuttings.
36	30							
	35							
26	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2

GROUND SURFACE EL. (ft): 66 **DATE START/END:** 1/12/2015 - 1/12/2015

VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

TOTAL DEPTH (ft): 27.0 **DRILLER NAME:** J. Wyant

LOGGED BY: A. Hernberg **RIG TYPE:** Mobile Drill International B53 Truck Rig

BORING B-15

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer **CASING I.D./O.D.:** NA/ NA **CORE BARREL TYPE:** NA

AUGER I.D/O.D.: 3.25 inch / 5 inch **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA

DRILLING METHOD: Hollow Stem Auger

WATER LEVEL DEPTHS (ft): Not measured

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/15	5-3-7-8			S-1A (0-0.5'): TOPSOIL. S-1B (0.5-0.9'): SANDY SILT (ML); ~60% low plasticity fines, ~30% fine sand, ~10% fine gravel, max. size 1/4", brown, wet. ALLUVIUM. S-1C (0.9-2'): SILT WITH SAND (ML); ~80% low plasticity fines, ~20% fine sand, brown and gray, moist to wet. ALLUVIUM.
		S-2	2 to 4	24/0	7-16-20-24			S-2 (2-4'): No recovery.
	5	S-3	4 to 6	24/24	5-11-12-14			S-3 (4-6'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~100% low plasticity fines, brown to gray, moist. Varves ~1/8 to 1/4" thick.
		S-4	6 to 8	24/24	9-11-13-12			S-4 (6-8'): Similar to S-3; gray-brown to reddish-brown. Micro-seams of silt/fine sand spaced at ~1/8 to 1/4".
56	10	S-5	10 to 12	24/24	1-2-2-4			S-5 (10-12'): Similar to S-3; ~100% medium plasticity fines, gray to reddish-brown.
	15	S-6	15 to 17	24/24	WOH-WOH-2-2			S-6 (15-17'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL/CH & ML); ~100% medium to high plasticity fines, gray to reddish-brown, wet. Varves ~1/4 to 3" thick.

NOTES:

PROJECT NAME: Arcadia Crossing

CITY/STATE: West Hartford, Connecticut

GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 66
VERTICAL DATUM: NAVD 88
DATE START/END: 1/12/2015 - 1/12/2015
DRILLING COMPANY: General Borings, Inc.

BORING B-15

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-WOH-WOH-3			S-7 (20-22'): VARVED DEPOSITS: FAT CLAY AND SILT (CH & ML); ~100% high plasticity fines, gray to reddish-brown, wet. Varves 2-4" thick.
	25	S-8	25 to 27	24/24	WOH-WOH-1-2			S-8 (25-27'): Similar to S-7; ~2" varves of ~50% silt and ~50% f sand from 15-17" in sample.
								End of boring at 27'. Backfill with cuttings.
36	30							
	35							
26	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 69.5
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/12/2015 - 1/12/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-16

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D./O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/13	2-2-3-11			S-1A (0-0.6'): TOPSOIL.
								S-1B (0.6-2'): SILTY SAND (SM); ~50% f-m sand, ~40% fines, ~10% fine gravel, max. size ~1/2", trace asphalt pieces, brown, wet. FILL.
		S-2	2 to 4	24/19	9-11-15-20			S-2A (2-2.3'): Similar to S-1B.
								S-2B (2.3-4'): SILT (ML); ~90% fines, ~10% fine sand, brown and gray, moist to wet. ALLUVIUM.
		S-3	4 to 6	24/24	6-10-17-12			S-3 (4-6'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~90% low plasticity fines, ~10% fine sand, gray to brown, moist. Clay varves ~1/8" thick with micro-seams of fine sand.
	5	S-4	6 to 8	24/19	7-13-17-17			S-4 (6-8'): Similar to S-3; ~95% low plasticity fines, ~5% fine sand.
60	10	S-5	10 to 12	24/24	2-3-4-6			S-5 (10-12'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% medium plasticity fines, ~5% fine sand, gray-brown to reddish-brown, wet. Varves ~1/8 to 1/4" thick, micro-seams of fine sand spaced at ~1/8".
	15	S-6	15 to 17	24/24	1-1-2-4			S-6 (15-17'): VARVED DEPOSITS:FAT CLAY AND SILT (CH & ML); ~100% medium to high plasticity fines, gray to reddish-brown, wet. Varves ~1/4 to 1" thick.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 69.5 **DATE START/END:** 1/12/2015 - 1/12/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-16

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	WOH-WOH-2-4			S-7 (20-22'): Similar to S-6; varves ~1/4 to 3" thick. LL = 62%, PL = 27%.
	25	S-8	25 to 27	24/24	2-1-1-4			S-8 (25-27'): Similar to S-6; high plasticity fines, varves ~1/4 to 3" thick.
								End of boring at 27'. Backfill with cuttings.
40	30							
	35							
30	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 71
VERTICAL DATUM: NAVD 88
TOTAL DEPTH (ft): 27.0
LOGGED BY: A. Hernberg
DATE START/END: 1/9/2015 - 1/9/2015
DRILLING COMPANY: General Borings, Inc.
DRILLER NAME: J. Wyant
RIG TYPE: Mobile Drill International B53 Truck Rig

BORING
B-17

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer
AUGER I.D/O.D.: 3.25 inch / 5 inch
DRILLING METHOD: Hollow Stem Auger
WATER LEVEL DEPTHS (ft): Not measured
CASING I.D./O.D.: NA/ NA
DRILL ROD O.D.: NM
CORE BARREL TYPE: NA
CORE BARREL I.D./O.D.: NA / NA

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/4	3-5-6-7			S-1A (0-0.2'): TOPSOIL. S-1B (0.2-2'): SILT WITH SAND (ML); ~80% low plasticity fines, ~20% fine sand, brown, moist. ALLUVIUM.
		S-2	2 to 4	24/12	7-11-14-13			S-2 (2-4'): SILT (ML); ~90% low plasticity fines, ~10% fine sand,mottled coloring with brown/ tan/ gray/ black, moist. ALLUVIUM.
	5	S-3	4 to 6	24/22	8-13-20-25			S-3 (4-6'): Similar to S-2.
		S-4	6 to 8	24/18	9-17-26-27			S-4 (6-8'): Similar to S-2.
61	10	S-5	10 to 12	24/24	4-5-5-8			S-5 (10-12'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% low to medium plasticity fines, ~5% fine sand, gray to brown, moist. ~1/4" thick clay varves with micro-seams of silt and f sand.
	15	S-6	15 to 17	24/24	3-3-6-8			S-6 (15-17'): Similar to S-5; ~100% medium plasticity fines, gray, wet. Mostly clay.

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 71 **DATE START/END:** 1/9/2015 - 1/9/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-17

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	1-1-2-2			S-7 (20-22'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, gray and reddish brown, wet. Varves range in thickness from 1/4" to 3".
	25	S-8	25 to 27	24/24	WOH-1-3-5			S-8 (25-27'): Similar to S-7; very wet.
								End of boring at 27'. Backfill with cuttings.
41	30							
	35							
31	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

BORING INFORMATION

LOCATION: See Fig. 2

GROUND SURFACE EL. (ft): 71 **DATE START/END:** 1/9/2015 - 1/9/2015

VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

TOTAL DEPTH (ft): 27.0 **DRILLER NAME:** J. Wyant

LOGGED BY: A. Hernberg **RIG TYPE:** Mobile Drill International B53 Truck Rig

BORING

B-18

DRILLING INFORMATION

HAMMER TYPE: Safety Hammer **CASING I.D./O.D.:** NA/ NA **CORE BARREL TYPE:** NA

AUGER I.D/O.D.: 3.25 inch / 5 inch **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA

DRILLING METHOD: Hollow Stem Auger

WATER LEVEL DEPTHS (ft): ▼ 11.1 1/23/2015 1:00 pm measured in OW-4

ABBREVIATIONS:
Pen. = Penetration Length
Rec. = Recovery Length
RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%
WOR = Weight of Rods
WOH = Weight of Hammer
S = Split Spoon Sample
C = Core Sample
U = Undisturbed Sample
SC = Sonic Core
DP = Direct Push Sample
HSA = Hollow-Stem Auger
Qp = Pocket Penetrometer Strength
Sv = Pocket Torvane Shear Strength
LL = Liquid Limit
PI = Plasticity Index
PID = Photoionization Detector
I.D./O.D. = Inside Diameter/Outside Diameter
NA, NM = Not Applicable, Not Measured
Blows per 6 in.: 140 lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-1	0 to 2	24/8	6-4-5-8			S-1A (0-0.5'): TOPSOIL. S-1B (0.5-2'): SILT WITH SAND (ML); ~80% low plasticity fines, ~20% fine sand, contains roots, brown and gray, moist. ALLUVIUM.
		S-2	2 to 4	24/19	8-17-12-20			S-2 (2-4'): Similar to S-1B; mottled brown, gray, and black coloring.
	5	S-3	4 to 6	24/18	5-13-21-21			S-3 (4-6'): SILT (ML); 99.4% low plasticity fines, 0.6% fine sand, gray and tan, moist. ALLUVIUM.
		S-4	6 to 8	24/12	14-20-23-24			S-4 (6-8'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~80% low plasticity fines, ~20% fine sand, brown and gray, moist.
61	10	S-5	10 to 12	24/24	2-4-6-8			S-5 (10-12'): VARVED DEPOSITS: LEAN CLAY AND SILT (CL & ML); ~95% medium to high plasticity fines, ~5% fine sand, brown and gray, moist. Clay varves ~1/8" thick with micro-seams of f sand/silt between varves.
	15	S-6	15 to 17	24/24	2-2-2-3			S-6 (15-17'): Similar to S-5; mostly gray with little reddish brown.

NOTES:

PROJECT NAME: Arcadia Crossing

CITY/STATE: West Hartford, Connecticut

GEI PROJECT NUMBER: 1415820

GEI Consultants

LOCATION: See Fig. 2
GROUND SURFACE EL. (ft): 71 **DATE START/END:** 1/9/2015 - 1/9/2015
VERTICAL DATUM: NAVD 88 **DRILLING COMPANY:** General Borings, Inc.

BORING B-18

Elev. (ft)	Depth (ft)	Sample Information: Sample No.	Sample Information: Depth (ft)	Sample Information: Pen./ Rec. (in)	Sample Information: Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Graphic Log	Soil and Rock Description
		S-7	20 to 22	24/24	2-2-2-2			S-7 (20-22'): VARVED DEPOSITS: LEAN TO FAT CLAY AND SILT (CL-CH & ML); ~100% medium to high plasticity fines, gray and reddish brown, wet. Varves range in thickness from 1" to 4".
	25	S-8	25 to 27	24/24	WOH-WOH-1-2			S-8 (25-27'): Similar to S-7.
								End of boring at 27'. Installed monitoring well OW-4 on Monday, 1/12/2015.
41	30							
	35							
31	40							
	45							

NOTES:

PROJECT NAME: Arcadia Crossing
CITY/STATE: West Hartford, Connecticut
GEI PROJECT NUMBER: 1415820

GEI Consultants

Appendix B

Test Pit Logs

TEST PIT LOG

TP-1

Project	Arcadia Crossing	**PG.**	1 **OF** 2
City/Town	West Hartford, CT	**Location**	West Building
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	65.3 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 20s-30s F	**Date**	1/22/2015

Depth (ft)	Soil Description
	0-0.5': TOPSOIL.
1	0.5-1.2': SILTY SAND (SM); ~60% fine to coarse sand, ~30% fines, ~10% gravel, moist, brown, organic-like odor, contains roots. FILL.
	1.2-1.8': WIDELY GRADED SAND WITH GRAVEL (SW); ~70% fine to coarse sand, ~30% fine to coarse gravel, moist, black, contains roots and leaves, contains ashes. FILL.
2	1.8-3.3': LEAN CLAY TO SILT (CL-ML); ~90% fines, ~10% fine sand, moist, brown and orange mottled coloring,
3	
	End of test pit at 3.3'.

Foundation Observations

Top of concrete footing/pile cap at 1.8' below grade. Footing sticks out from foundation wall by 6" +/-
Bottom of footing at 3.1' below grade. Footing is 16" thick (in elevation).

Notes:
Test pit backfilled with excavated soil upon completion.
Ground elevation is approximate.
8-10" of frozen ground.
Did not observe any utilities.
Piles noted under wall footing on drawings from 2002 renovations.

Pit Dimensions (ft)

length	2.9
width	3.8
depth	3.3

GEI Consultants

TEST PIT LOG

TP-1

Project	Arcadia Crossing	**PG.** 2 **OF** 2	
City/Town	West Hartford, CT	**Location**	West Building
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**GEI Proj. No.**	1415820

Photographs

Notes:

Pit Dimensions (ft)

length	2.9
width	3.8
depth	3.3

GEI Consultants

TEST PIT LOG

TP-2

Project	Arcadia Crossing	**PG.**	1 **OF** 2
City/Town	West Hartford, CT	**Location**	Middle Building
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	59.0 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 30s F	**Date**	1/23/2015

Depth (ft)	Soil Description
	0-0.3': ASPHALT.
1	0.3-0.9': WIDELY GRADED GRAVEL (GW); ~90% gravel (1 to 4 inch), ~10% fine to medium sand, dry to moist, gray and tan. FILL.
2	0.9-4.2': LEAN CLAY TO SILT (CL-ML); ~100% medium plasticity fines, moist, tan and gray, trace gravel and cobbles, contains brick and asphalt fragments. FILL.
3	
4	
5	4.2-5.5': NARROWLY GRADED GRAVEL (GP); ~100% 1.25" gravel. FILL. Note: this fill was only observed along the foundation wall.
6	5.5-6.3': LEAN CLAY TO SILT (CL-ML); ~100% medium plasticity fines, moist, tan and gray, trace gravel and cobbles, contains brick and asphalt fragments. FILL.
	End of test pit at 6.3'.

Foundation Observations

Top of concrete footing/pile cap at 5.0' below grade. Footing sticks out from foundation wall by 8".
Bottom of footing at 6.3' below grade. Footing is ~15.5" thick (in elevation).
Top of footing is ~6" below finished floor elevation inside the building.

Notes:

Test pit backfilled with excavated soil upon completion.
1-4" stone placed at the top of the test pit after backfilling.
Ground elevation is approximate.
5" O.D. clay pipe encountered, parallel to wall. Top of pipe approximately level with the top of the footing. Pipe only encountered in east half of test pit.

Piles noted under wall footing on original (1940) drawings.

Pit Dimensions (ft)

length	3.8
width	9.2
depth	6.3

GEI Consultants

TEST PIT LOG

TP-2

Project	Arcadia Crossing
City/Town	West Hartford, CT
Client	Center Development Corporation
Contractor	General Borings, Inc.

PG. 2 **OF** 2

Location Middle Building
See Fig. 2

GEI Proj. No. 1415820

Photographs

Notes:

Pit Dimensions (ft)

length	3.8
width	9.2
depth	6.3

GEI Consultants

TEST PIT LOG

TP-3

Project	Arcadia Crossing	**PG.**	1 **OF** 2
City/Town	West Hartford, CT	**Location**	Old Chapel - Addition
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	58.5 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 30s F	**Date**	1/22/2015

Depth (ft)	Soil Description
	0-0.7': TOPSOIL.
1	0.7-1.5' (on east side of test pit), 0.7-4.3' (on west side of test pit, near the building): NARROWLY GRADED SAND WITH SILT (SP-SM); ~90% fine to medium sand, ~10% fines, moist, tan, trace gravel. FILL.
2	1.5-4.3' (on east side of test pit): LEAN CLAY WITH SAND TO SILT WITH SAND (CL-ML); ~80% fines, ~10% fine sand, ~10% fine to coarse gravel, moist, reddish-brown, gray, and brown mottled coloring, contains cobbles. FILL.
3	
4	
	End of test pit at 4.3'.

Foundation Observations

Brick wall transitions to concrete at 1.3' below grade.
Bottom of concrete wall at 4.3' below grade.
No footing or individual pipe cap observed.

The subgrade below the concrete wall was very soft and wet and could be easily penetrated with a hand shovel.

Notes:

Test pit backfilled with excavated soil upon completion.
Ground elevation is approximate.
Encountered a 5" O.D. asphalt drainage pipe at 3.8'. Pipe is brittle and easily damaged. General replaced a 2' length of pipe with a 5" I.D. PVC pipe and rubber couplings.

Drawings with foundation details not obtained.

Pit Dimensions (ft)

length	3.0
width	3.3
depth	4.3

GEI Consultants

TEST PIT LOG

TP-3

Project	Arcadia Crossing
City/Town	West Hartford, CT
Client	Center Development Corporation
Contractor	General Borings, Inc.

PG. 2 **OF** 2

Location Old Chapel - Addition

See Fig. 2

GEI Proj. No. 1415820

Photographs

Notes:

Pit Dimensions (ft)

length	3.0
width	3.3
depth	4.3

GEI Consultants

TEST PIT LOG

TP-4

Project	Arcadia Crossing	**PG.** 1 **OF** 3	
City/Town	West Hartford, CT	**Location**	Chapel
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	60.5 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 30s F	**Date**	1/22/2015

Depth (ft)	Soil Description
	0-0.4': TOPSOIL
1	0.4-5.5': WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to coarse sand, ~30% fine to coarse gravel, ~10% fines, brown 0.4-3.0', reddish-brown 3.0-5.5', moist 0.4-3.0', wet 3.0-5.5'. Contains frequent brick and tile fragments. FILL.
2	Water flowing into the excavation at ~3.5'.
3	
4	
5	
6	5.5-5.8': VARVED DEPOSITS: LEAN CLAY AND SILT (CL AND ML). End of test pit at 5.8'.

Foundation Observations

Top of pile cap at 3.0' below grade. Bottom of pile cap at 5.4' below grade. Refer to sketch on page 2.

Notes:
Test pit backfilled with excavated soil upon completion.
Ground elevation is approximate.
Battered concrete piles noted on 1960 design drawings.

Pit Dimensions (ft)

length	11.0
width	3.0
depth	5.8

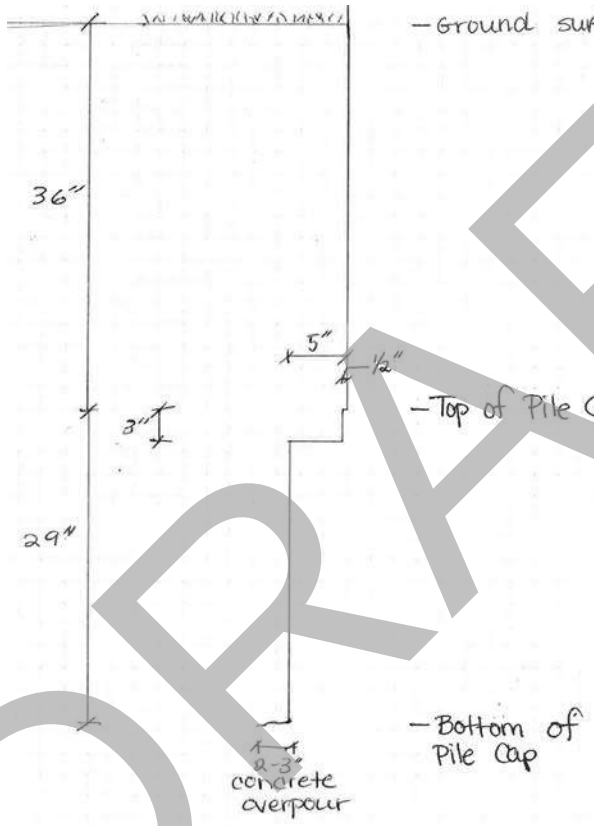
GEI Consultants

TEST PIT LOG

TP-4

Project	Arcadia Crossing	**PG.**	2	**OF**	3
City/Town	West Hartford, CT	**Location**	Chapel		
Client	Center Development Corporation		See Fig. 2		
Contractor	General Borings, Inc.	**GEI Proj. No.**	1415820		

Sketch of Footing/Pile Cap Cross Section



Elevation View of Pile Cap

Not to Scale

Notes:

Pit Dimensions (ft)

length	11.0
width	3.0
depth	5.8

GEI Consultants

TEST PIT LOG

TP-4

Project	Arcadia Crossing		**PG.**	3 **OF**	3
City/Town	West Hartford, CT		**Location**	Chapel	
Client	Center Development Corporation			See Fig. 2	
Contractor	General Borings, Inc.		**GEI Proj. No.**	1415820	

Photographs

Notes:

Pit Dimensions (ft)

length	11.0
width	3.0
depth	5.8

GEI Consultants

TEST PIT LOG

TP-5

Project	Arcadia Crossing	**PG.**	1 **OF** 2
City/Town	West Hartford, CT	**Location**	Chapel
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	67.0 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 30s F	**Date**	1/23/2015

Depth (ft)	Soil Description
1	0-2.5': NARROWLY GRADED GRAVEL (GP); ~100% 1-1/4" gravel (along the building only). FILL. 0-5.0': WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM); ~60% fine to coarse sand, ~30% fine to coarse gravel, ~10% fines, brown to reddish-brown, moist 0-4.0', wet 4.0-5.0'. Contains frequent brick and tile fragments. FILL.
2	Water flowed into the excavation at 4.0'
3	
4	
5	End of test pit at 5.0'.

Foundation Observations

Brick wall transitions to concrete at 2.2'.
Test pit terminated due to flowing water and presence of utilities. Wall foundation not entirely visible.
At ~4.7' below grade there was a lip of concrete. At ~5.0' below grade, a crowbar could be inserted below the wall.

Notes:

Test pit backfilled with excavated soil upon completion.
Ground elevation is approximate.
Utilities observed:

1) ~6" diameter pipe ~1.1' from the wall, parallel to the wall, 3.8' deep. 2) ~6" diameter pipe ~3.0' from the wall, parallel to the wall, ~3.2' deep. 3) 4" perforated drainage pipe along the wall, ~2.1' deep.

Removed and replaced perforated drainage pipe.

Pit Dimensions (ft)

length	10.0
width	3.0
depth	5.0

GEI Consultants

TEST PIT LOG

TP-5

Project	Arcadia Crossing		**PG.**	2 **OF** 2	
City/Town	West Hartford, CT		**Location**	Chapel	
Client	Center Development Corporation			See Fig. 2	
Contractor	General Borings, Inc.		**GEI Proj. No.**	1415820	

Photographs

Notes:

Pit Dimensions (ft)

length	10.0
width	3.0
depth	5.0

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TEST PIT LOG

TP-6

Project	Arcadia Crossing	**PG.**	1 **OF** 2
City/Town	West Hartford, CT	**Location**	Old Chapel
Client	Center Development Corporation		See Fig. 2
Contractor	General Borings, Inc.	**Ground El.**	72.3 ft
Equipment/Reach	Ford 655A Backhoe and Hand Tools	**Datum**	NAVD 88
Operator	Jimmy Casson **GEI Rep** A. Hernberg	**GEI Proj. No.**	1415820
Weather	Clear, 30s F	**Date**	1/23/2015

Depth (ft)	Soil Description
	0-0.4': TOPSOIL.
1	0.4-5.8': LEAN CLAY TO SILT (CL-ML); ~90% medium plasticity fine, ~5% fine to coarse sand, ~5% fine to coarse gravel, moist, brown, gray, and reddish-brown, frequent concrete, brick, and metal pieces. FILL.
2	
3	
4	
5	
6	End of test pit at 5.8'.

Foundation Observations

Bottom of wall at 5.8' below grade. No individual wall footing observed.

Notes:
Test pit backfilled with excavated soil upon completion.
Ground elevation is approximate.
The wall was judged as approximately 20" thick (~9" outside, ~8" inside, and ~3" thickness of the window).

Pit Dimensions (ft)

length	9.0
width	2.8
depth	5.8

GEI Consultants

TEST PIT LOG

TP-6

Project	Arcadia Crossing
City/Town	West Hartford, CT
Client	Center Development Corporation
Contractor	General Borings, Inc.

PG. 2 **OF** 2

Location Old Chapel

See Fig. 2

GEI Proj. No. 1415820

Photographs

Notes:

Pit Dimensions (ft)

length	9.0
width	2.8
depth	5.8

GEI Consultants

Appendix C

Well Installation Logs

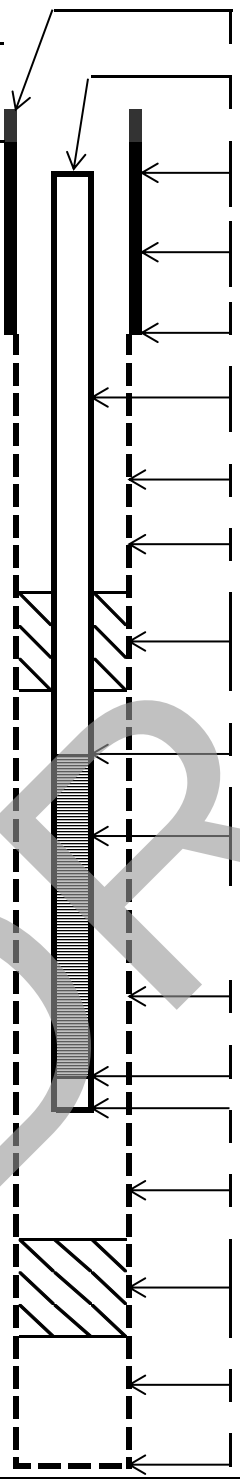
Monitoring Well Installation Log

OW-1

Project	Arcadia Crossing	**GEI Proj. No.**	1415820
City / Town	West Hartford, CT	**Location**	B-2
Client	Center Development Corporation		
Contractor	General Borings		
Driller	T. McGovern **GEI Rep.** A. Hernberg	**Install Date**	1/6/2015

Survey Datum: NAVD 88

Ground Elevation: 54



Length of Surface Casing above Ground	2.3'
Dist. Top of Surf. Casing to Top of Riser Pipe	~1"
Type of Seal around Surface Casing	Concrete
Type of Surface Casing	Steel with Locking Cap
ID and OD of Riser Pipe	3.5 in. ID / 4.0 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	Drill Cuttings and Sand
Diameter of Borehole	6.0 in.
Depth Top of Seal	11.0 ft
Type of Seal	Bentonite Chips
Depth Bottom of Seal	13.5 ft
Depth Top of Screened Section	15.0 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	3.5 in. ID / 4.0 in. OD
Type of Filter Material	Filpro Filtration #2 Sand
Depth Bottom of Screened Section	25.0 ft
Depth Bottom of Silt Trap	N/A
Depth Bottom of Filter Material	25.0 ft
Depth Top of Seal	N/A
Type of Seal	N/A
Depth Bottom of Seal	N/A
Type of Backfill below Filter Material	N/A
Bottom of Borehole	25'11"

Notes: At the time of its installation, OW-1 was a dry well.

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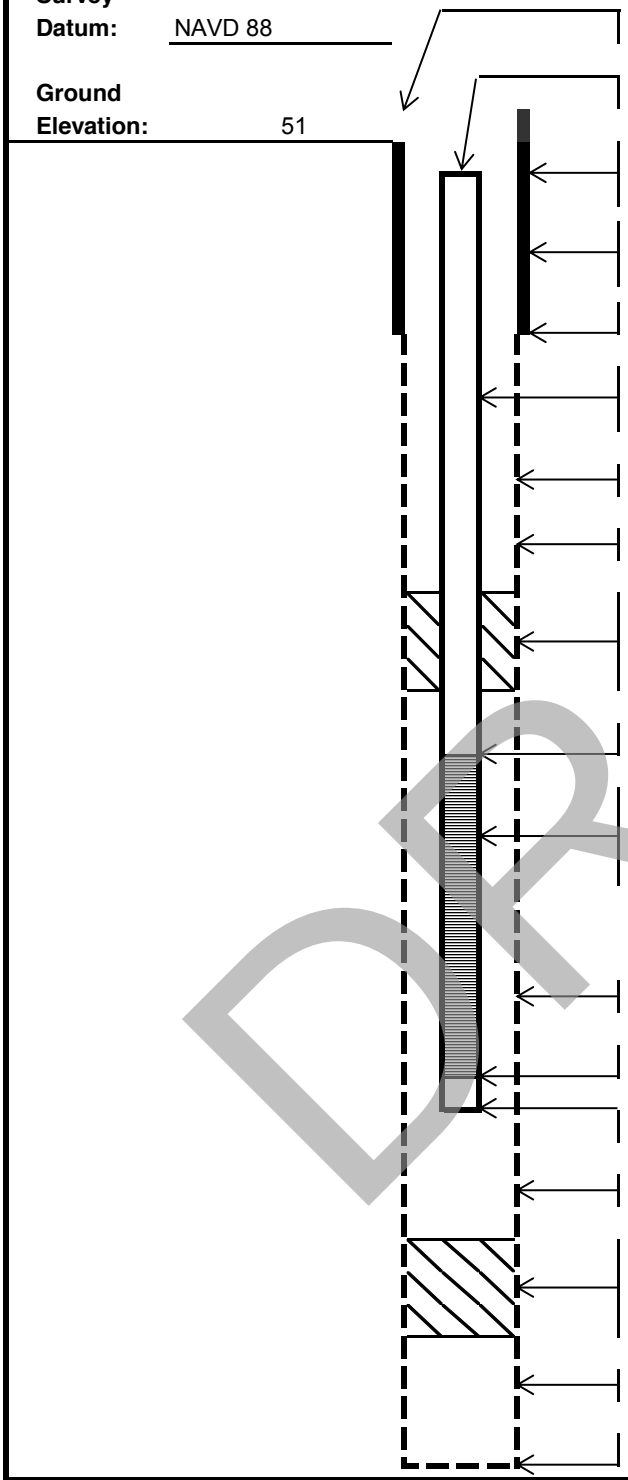
Monitoring Well Installation Log

OW-2

Project	Arcadia Crossing	**GEI Proj. No.**	1415820
City / Town	West Hartford, CT	**Location**	B-8
Client	Center Development Corporation		
Contractor	General Borings		
Driller	J. Wyant **GEI Rep.** A. Hernberg	**Install Date**	1/13/2015

Survey Datum: NAVD 88

Ground Elevation: 51



Length of Surface Casing above Ground	2.1'
Dist. Top of Surf. Casing to Top of Riser Pipe	~1"
Type of Seal around Surface Casing	Concrete
Type of Surface Casing	Steel with Locking Cap
ID and OD of Riser Pipe	1.5 in. ID / 2.0 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	Drill Cuttings
Diameter of Borehole	5.25 in.
Depth Top of Seal	11.5 ft
Type of Seal	Bentonite Chips
Depth Bottom of Seal	12.5 ft
Depth Top of Screened Section	13.0 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	1.5 in. ID / 2.0 in. OD
Type of Filter Material	Filpro Filtration #2 Sand
Depth Bottom of Screened Section	23.0 ft
Depth Bottom of Silt Trap	N/A
Depth Bottom of Filter Material	27.0 ft
Depth Top of Seal	N/A
Type of Seal	N/A
Depth Bottom of Seal	N/A
Type of Backfill below Filter Material	N/A
Bottom of Borehole	27.0 ft

Notes:

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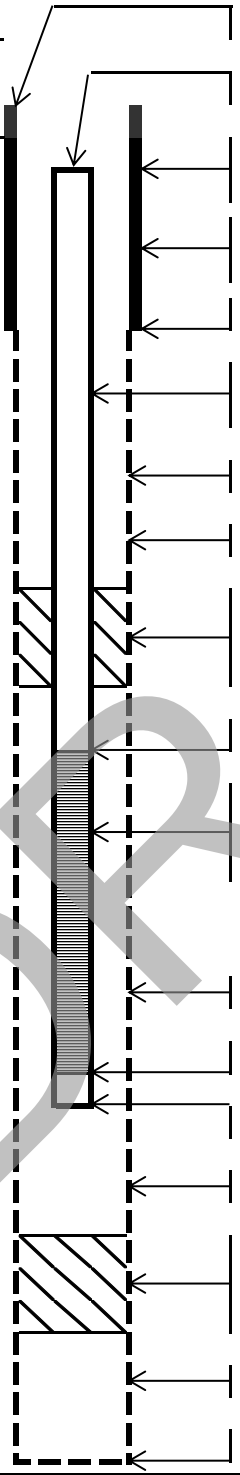
Monitoring Well Installation Log

OW-3

Project	Arcadia Crossing	**GEI Proj. No.**	1415820
City / Town	West Hartford, CT	**Location**	B-12
Client	Center Development Corporation		
Contractor	General Borings		
Driller	J. Wyant **GEI Rep.** A. Hernberg	**Install Date**	1/6/2015

Survey Datum: NAVD 88

Ground Elevation: 54.5



Length of Surface Casing above Ground	2.2'
Dist. Top of Surf. Casing to Top of Riser Pipe	~1"
Type of Seal around Surface Casing	Concrete
Type of Surface Casing	Steel with Locking Cap
ID and OD of Riser Pipe	1.5 in. ID / 2.0 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	Drill Cuttings
Diameter of Borehole	5.25 in.
Depth Top of Seal	10.0 ft
Type of Seal	Bentonite Chips
Depth Bottom of Seal	11.0 ft
Depth Top of Screened Section	13.0 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	1.5 in. ID / 2.0 in. OD
Type of Filter Material	#2 Sand
Depth Bottom of Screened Section	23.0 ft
Depth Bottom of Silt Trap	N/A
Depth Bottom of Filter Material	27.0 ft
Depth Top of Seal	N/A
Type of Seal	N/A
Depth Bottom of Seal	N/A
Type of Backfill below Filter Material	N/A
Bottom of Borehole	27.0 ft

Notes:

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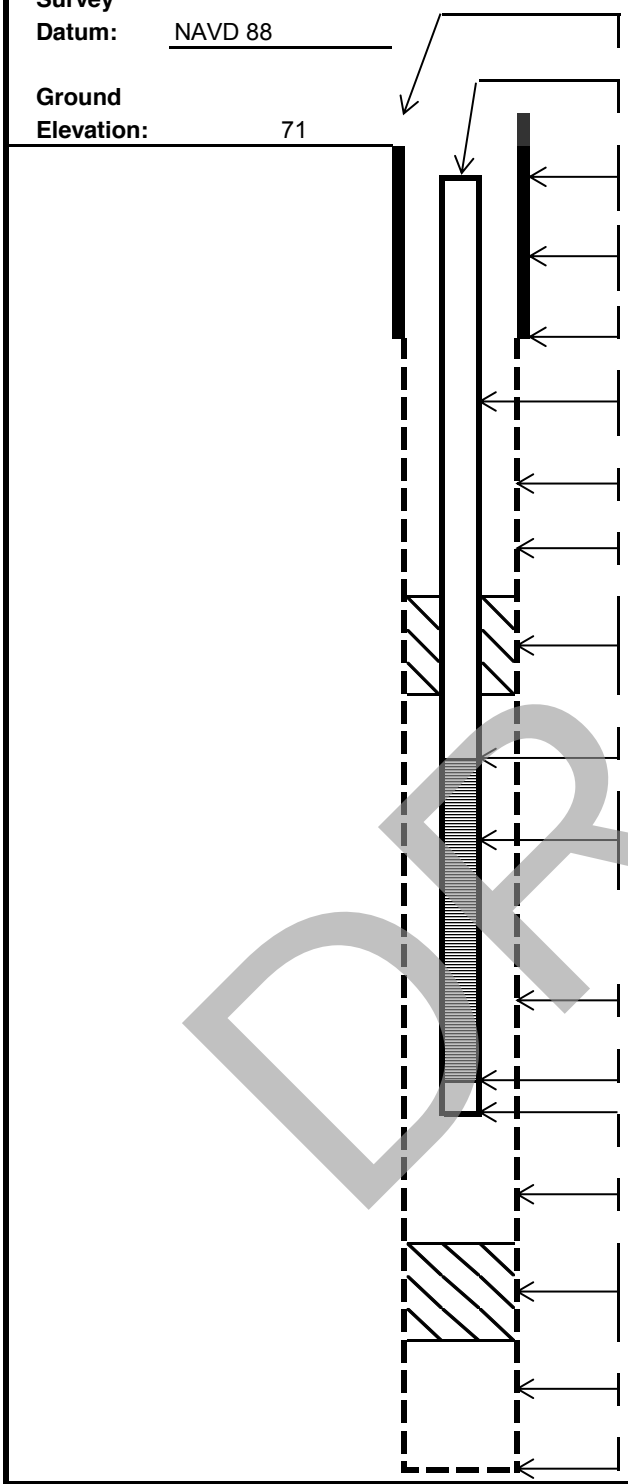
Monitoring Well Installation Log

OW-4

Project	Arcadia Crossing	**GEI Proj. No.**	1415820
City / Town	West Hartford, CT	**Location**	B-18
Client	Center Development Corporation		
Contractor	General Borings		
Driller	J. Wyant **GEI Rep.** A. Hernberg	**Install Date**	1/12/2015

Survey Datum: NAVD 88

Ground Elevation: 71



Length of Surface Casing above Ground	2.3'
Dist. Top of Surf. Casing to Top of Riser Pipe	~1"
Type of Seal around Surface Casing	Concrete
Type of Surface Casing	Steel with Locking Cap
ID and OD of Riser Pipe	1.5 in. ID / 2.0 in. OD
Type of Riser Pipe	PVC
Type of Backfill around Riser Pipe	Drill Cuttings and Sand
Diameter of Borehole	6.0 in.
Depth Top of Seal	10.0 ft
Type of Seal	Bentonite Chips
Depth Bottom of Seal	11.0 ft
Depth Top of Screened Section	13.0 ft
Type of Screen	PVC
Description of Screen Openings	0.020 in. slots
ID and OD of Screened Section	3.5 in. ID / 4.0 in. OD
Type of Filter Material	Filpro Filtration #2 Sand
Depth Bottom of Screened Section	23.0 ft
Depth Bottom of Silt Trap	N/A
Depth Bottom of Filter Material	27.0 ft
Depth Top of Seal	N/A
Type of Seal	N/A
Depth Bottom of Seal	N/A
Type of Backfill below Filter Material	#2 Filter Sand
Bottom of Borehole	27.0 ft

Notes:

GEI Consultants

Appendix D

Geotechnical Laboratory Test Results

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	---	Sample Type:	---	Tested By:	dln
Sample ID:	---	Test Date:	01/26/15	Checked By:	emm
Depth :	---	Test Id:	320772		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-1	S- 3	4-6 ft	Moist, reddish brown clay	28.0
B-3	S- 6	15-17 ft	Moist, dark yellowish brown clay	49.0
B-4	S- 2	3-5 ft	Moist, brown silt	38.8
B-5	S- 11A	40-42 ft	Moist, red clay	27.3
B-6	S- 2A	3-4.6 ft	Moist, brown clayey sand with gravel	20.1
B-9	S- 3	4-6 ft	Moist, grayish brown clay	36.2
B-9	S- 11	40-42 ft	Moist, red silty sand with gravel	10.4

Notes: Temperature of Drying : 110º Celsius

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	---	Sample Type:	---	Tested By:	dln
Sample ID:	---	Test Date:	01/26/15	Checked By:	emm
Depth :	---	Test Id:	320776		

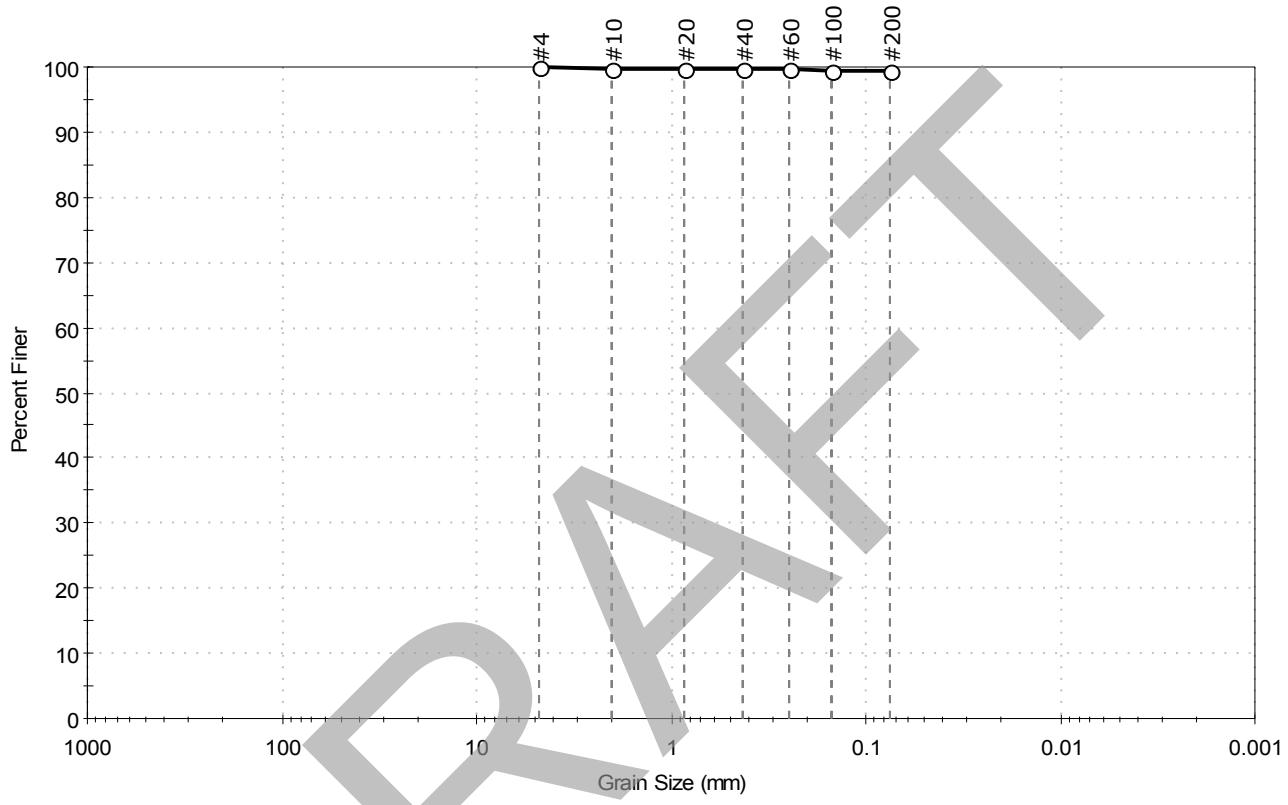
Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-11	S- 2	2-4 ft	Moist, grayish brown silt	30.9
B-14	S- 2	2-4 ft	Moist, dark grayish brown clay	36.3
B-16	S- 7	20-22 ft	Moist, grayish brown clay	60.6
B-18	S- 3	4-6 ft	Moist, grayish brown silt	32.0

Notes: Temperature of Drying : 110º Celsius

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-4	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-2	Test Date:	01/23/15	Checked By:	emm
Depth :	3-5 ft	Test Id:	320783		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	0.6	99.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	99		
#200	0.075	99		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

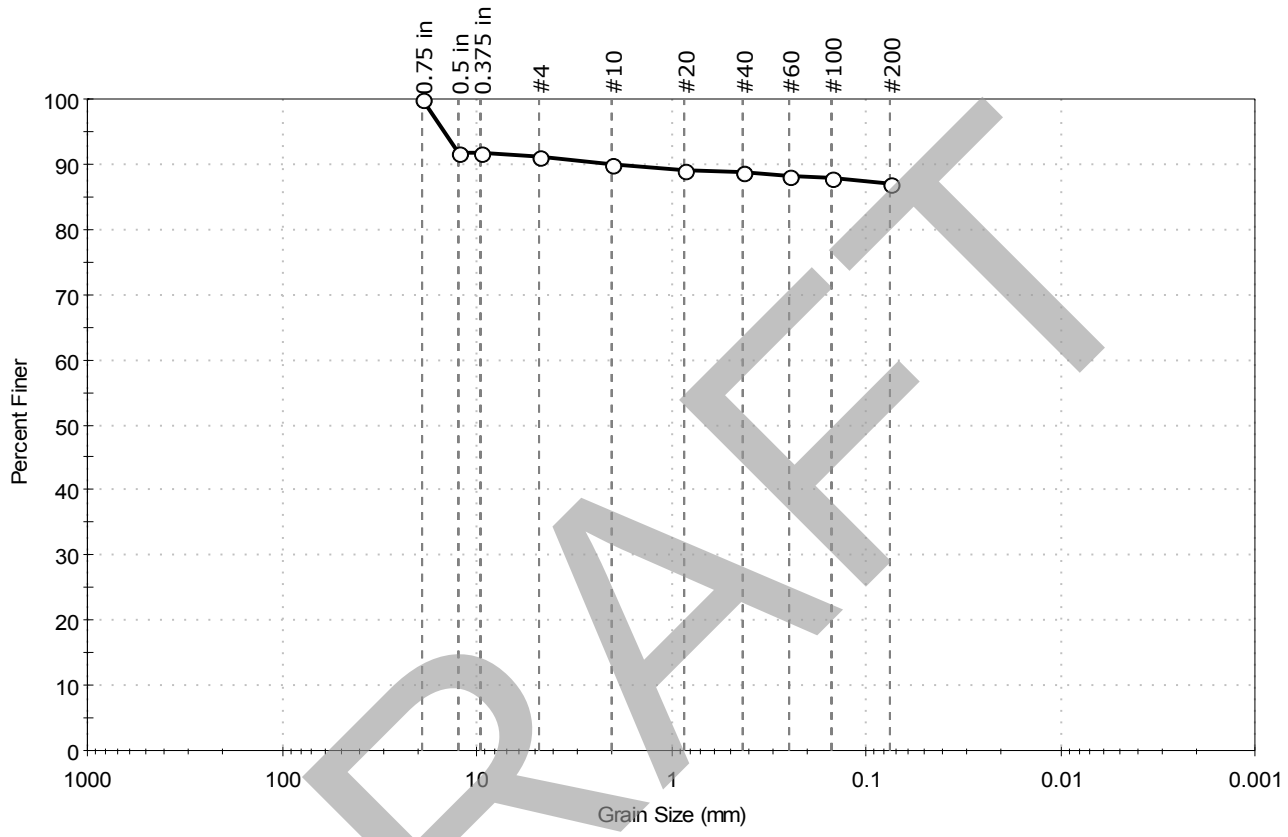
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-5	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-11A	Test Date:	01/23/15	Checked By:	emm
Depth :	40-42 ft	Test Id:	320788		
Test Comment:	---				
Sample Description:	Moist, red clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	8.9	4.0	87.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	92		
0.375 in	9.50	92		
#4	4.75	91		
#10	2.00	90		
#20	0.85	89		
#40	0.42	89		
#60	0.25	88		
#100	0.15	88		
#200	0.075	87		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

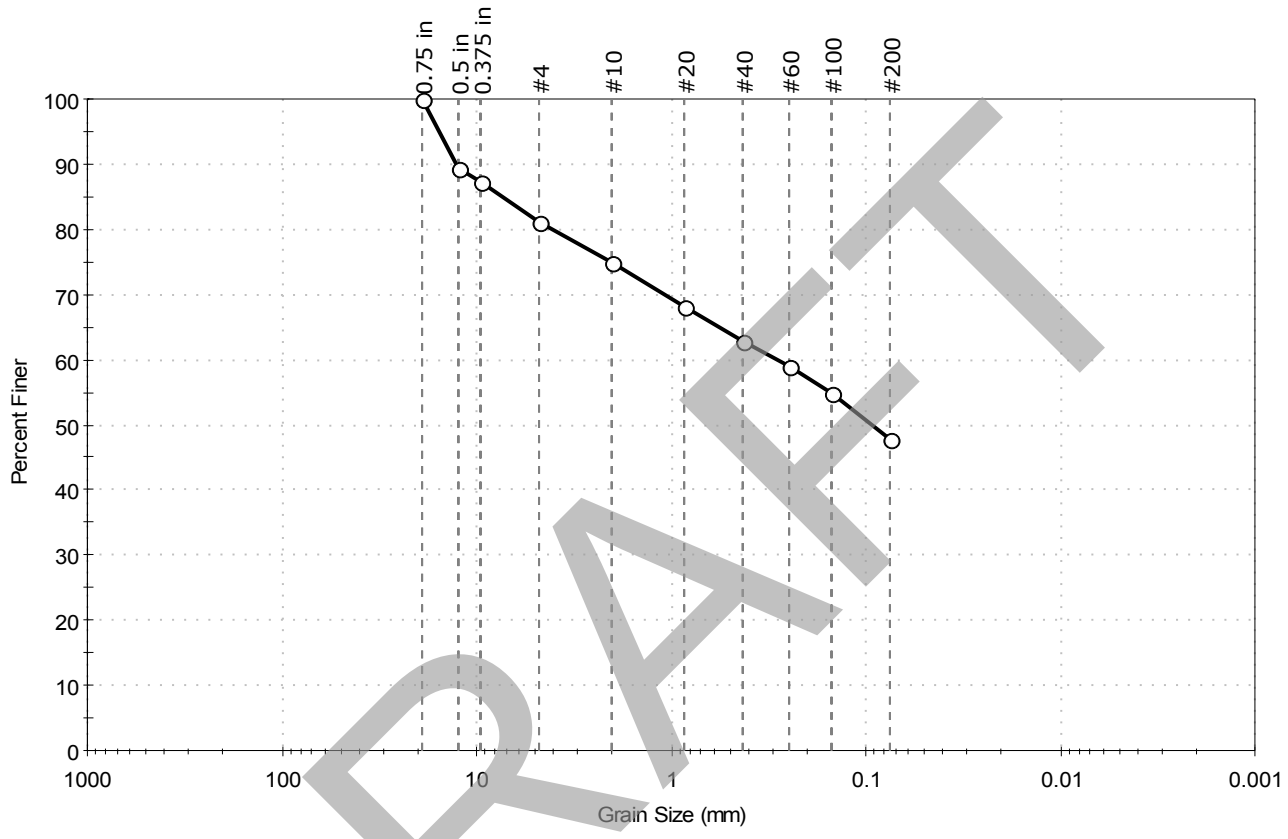
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-6	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-2A	Test Date:	01/23/15	Checked By:	emm
Depth :	3-4.6 ft	Test Id:	320784		
Test Comment:	---				
Sample Description:	Moist, brown clayey sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	18.7	33.4	47.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	90		
0.375 in	9.50	87		
#4	4.75	81		
#10	2.00	75		
#20	0.85	68		
#40	0.42	63		
#60	0.25	59		
#100	0.15	55		
#200	0.075	48		

Coefficients

D_{85} = 7.3099 mm D_{30} = N/A
D_{60} = 0.2844 mm D_{15} = N/A
D_{50} = 0.0925 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

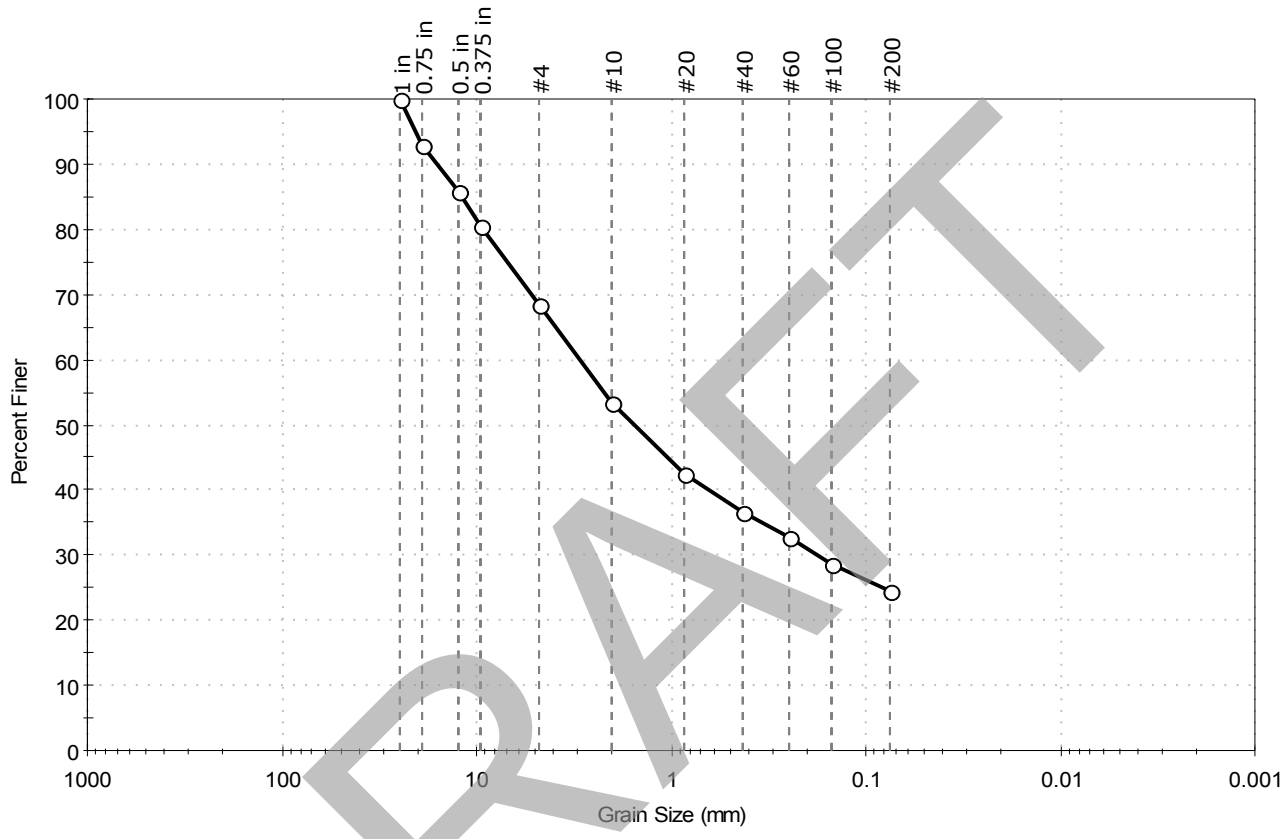
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-9	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-11	Test Date:	01/23/15	Checked By:	emm
Depth :	40-42 ft	Test Id:	320785		
Test Comment:	---				
Sample Description:	Moist, red silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	31.6	43.9	24.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	93		
0.5 in	12.50	86		
0.375 in	9.50	81		
#4	4.75	68		
#10	2.00	53		
#20	0.85	43		
#40	0.42	37		
#60	0.25	33		
#100	0.15	29		
#200	0.075	24		

Coefficients

D_{85} = 12.0460 mm D_{30} = 0.1770 mm

D_{60} = 2.9264 mm D_{15} = N/A

D_{50} = 1.5277 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

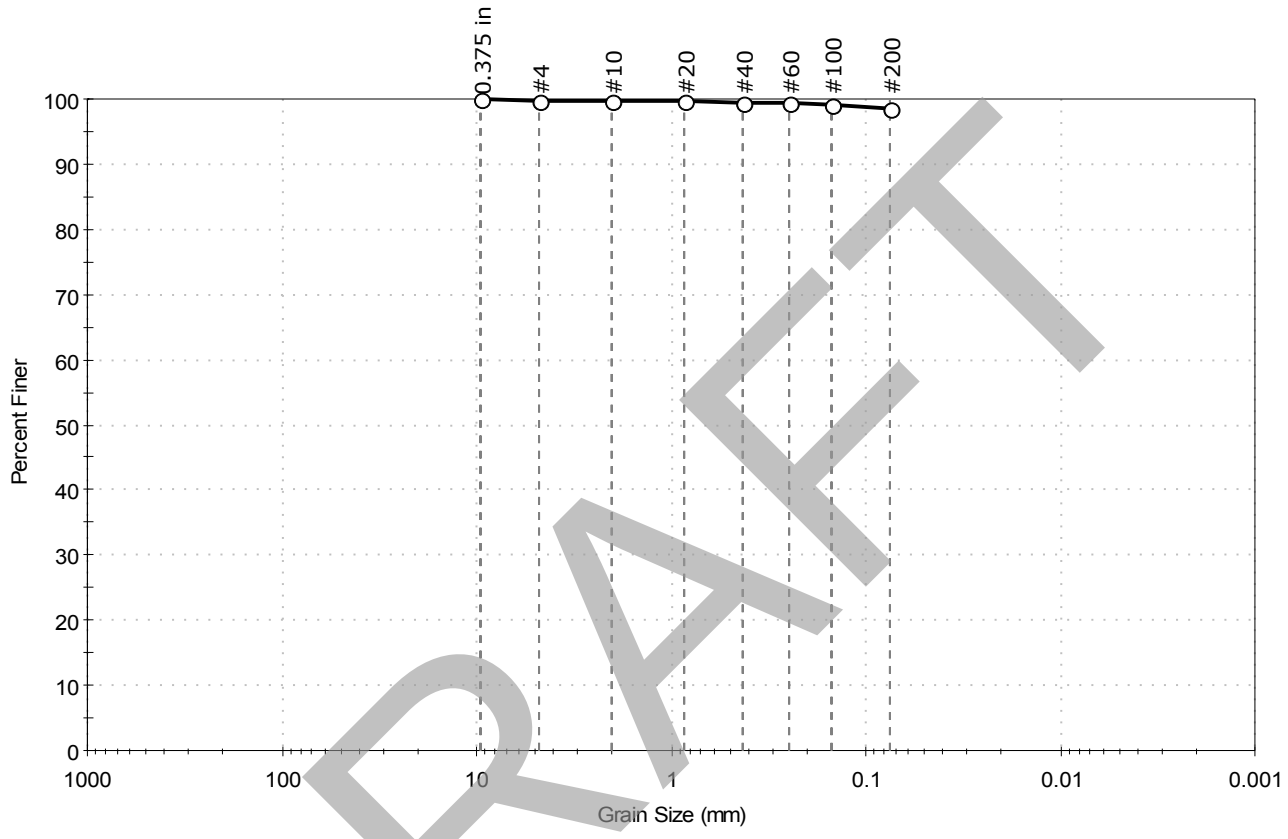
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-11	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-2	Test Date:	01/23/15	Checked By:	emm
Depth :	2-4 ft	Test Id:	320786		
Test Comment:	---				
Sample Description:	Moist, grayish brown silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.3	1.0	98.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	99		
#100	0.15	99		
#200	0.075	99		

Coefficients

D_{85} = N/A D_{30} = N/A
D_{60} = N/A D_{15} = N/A
D_{50} = N/A D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

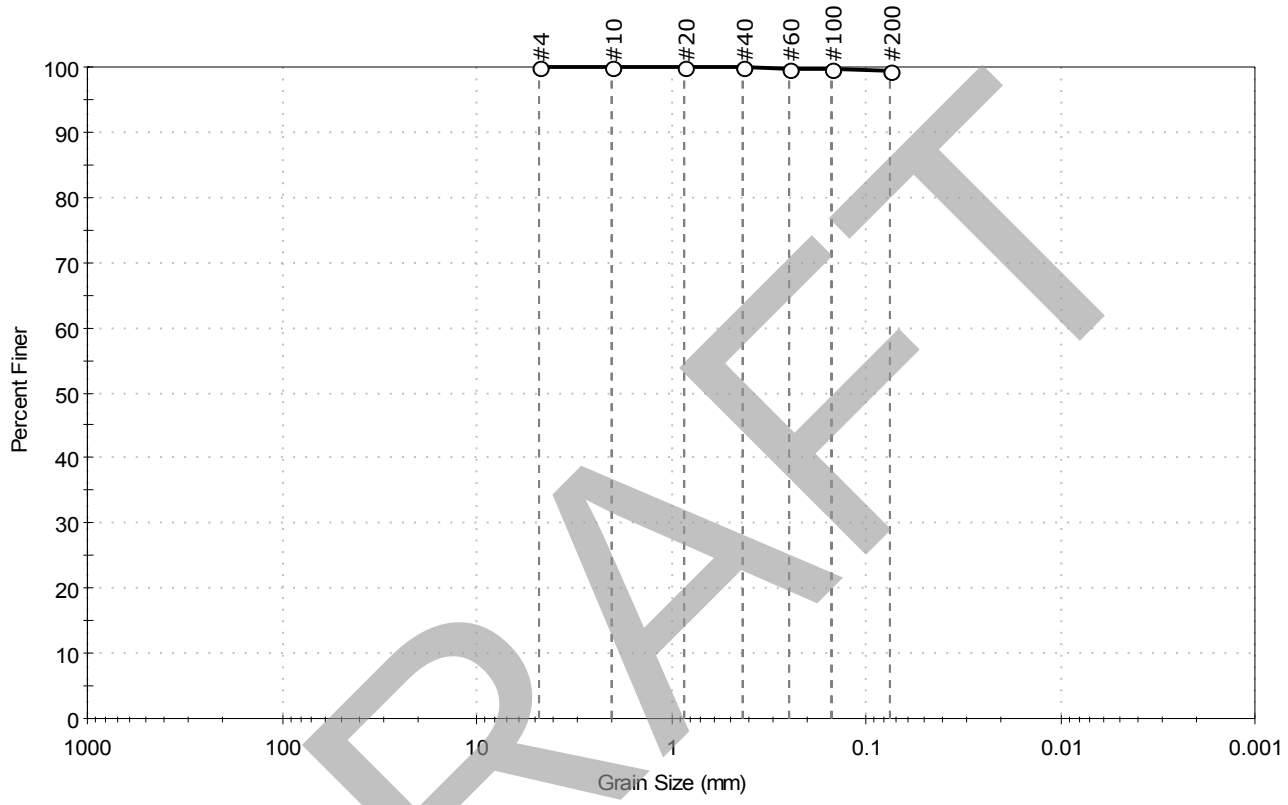
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-18	Sample Type:	bag	Tested By:	jbr
Sample ID:	S-3	Test Date:	01/23/15	Checked By:	emm
Depth :	4-6 ft	Test Id:	320787		
Test Comment:	---				
Sample Description:	Moist, grayish brown silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	0.6	99.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	99		

Coefficients

D_{85} = N/A	D_{30} = N/A
D_{60} = N/A	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

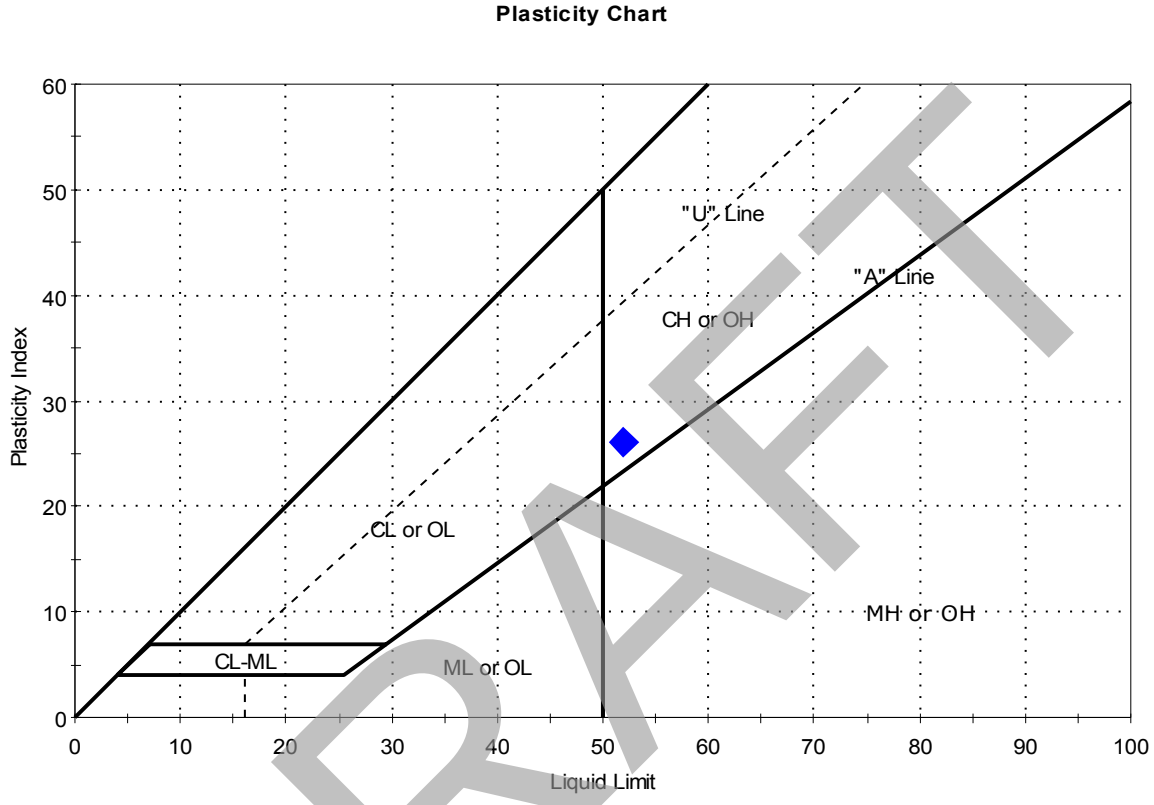
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-1	Sample Type:	bag	Tested By:	cam
Sample ID:	S-3	Test Date:	01/23/15	Checked By:	emm
Depth :	4-6 ft	Test Id:	320778		
Test Comment:	---				
Sample Description:	Moist, reddish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-3	B-1	4-6 ft	28	52	26	26	0.1	

Sample Prepared using the WET method

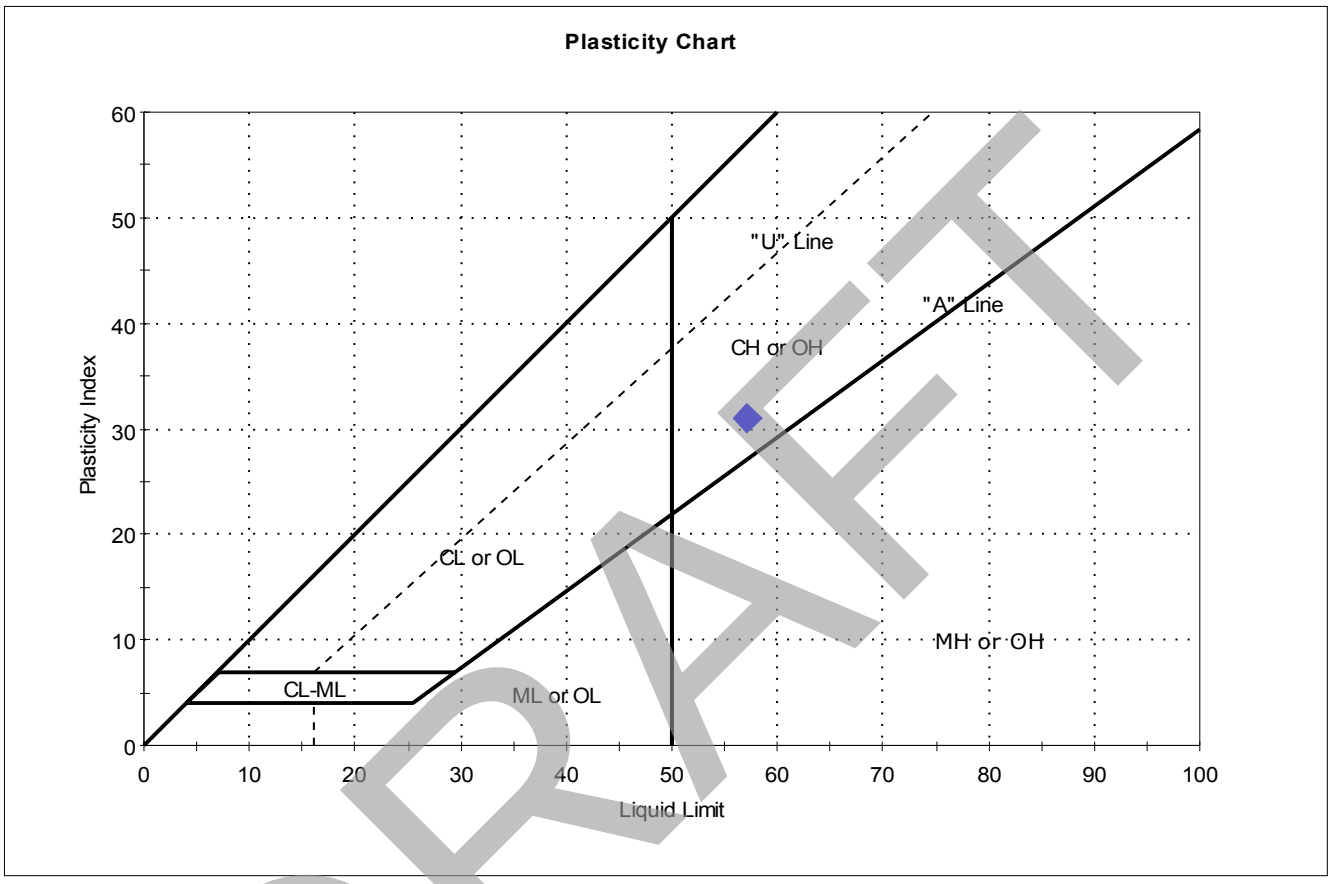
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-3	Sample Type:	bag	Tested By:	cam
Sample ID:	S-6	Test Date:	01/23/15	Checked By:	emm
Depth :	15-17 ft	Test Id:	320779		
Test Comment:	---				
Sample Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-6	B-3	15-17 ft	49	57	26	31	0.7	

Sample Prepared using the WET method

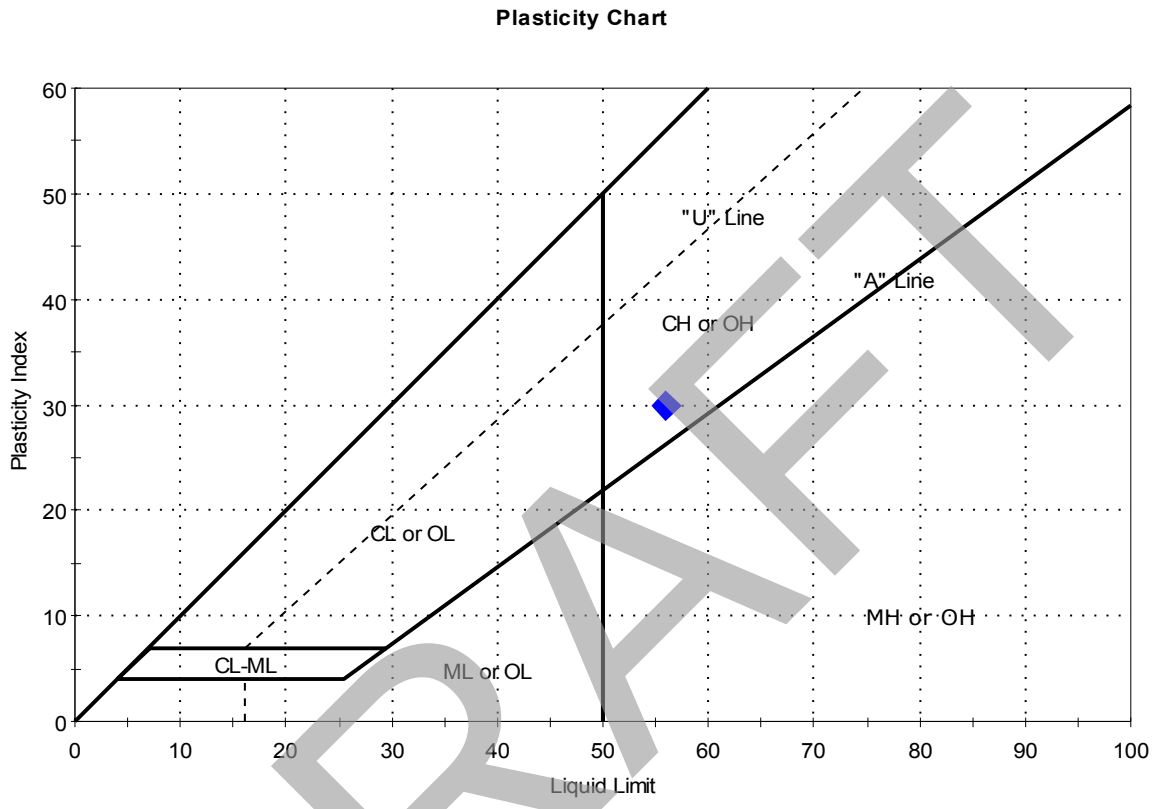
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-9	Sample Type:	bag	Tested By:	cam
Sample ID:	S-3	Test Date:	01/23/15	Checked By:	emm
Depth :	4-6 ft	Test Id:	320780		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-3	B-9	4-6 ft	36	56	26	30	0.3	

Sample Prepared using the WET method

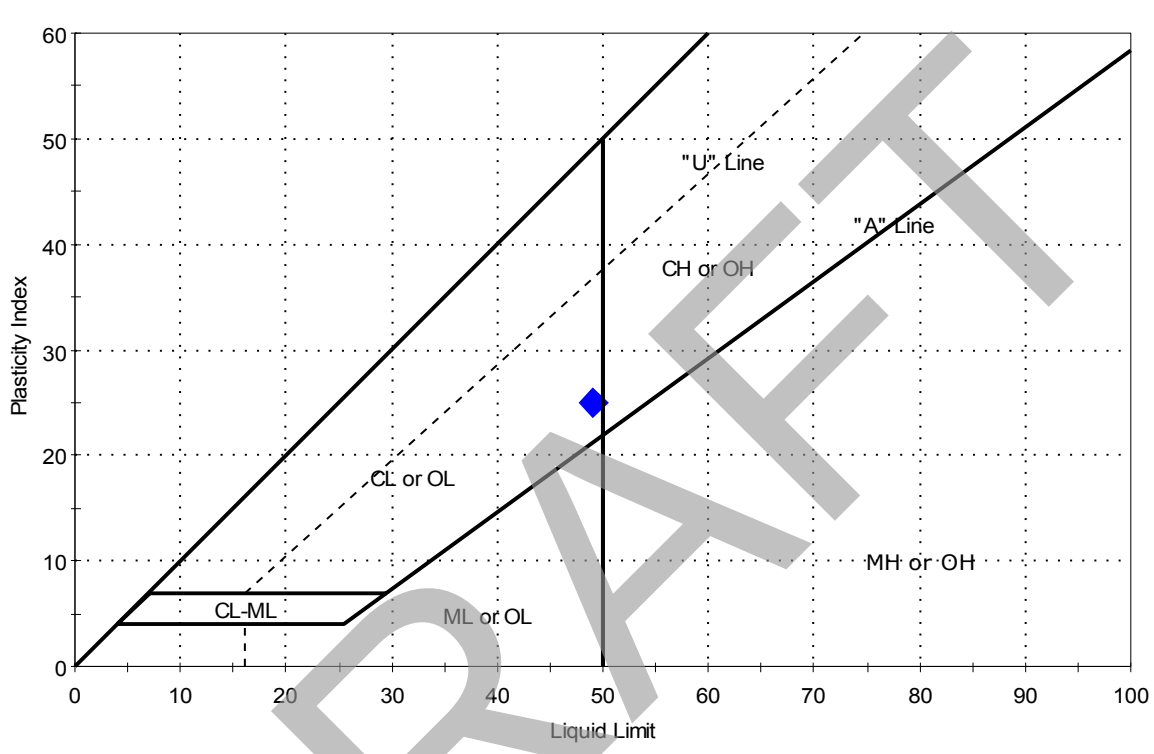
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-14	Sample Type:	bag	Tested By:	cam
Sample ID:	S-2	Test Date:	01/23/15	Checked By:	emm
Depth :	2-4 ft	Test Id:	320781		
Test Comment:	---				
Sample Description:	Moist, dark grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-2	B-14	2-4 ft	36	49	24	25	0.5	

Sample Prepared using the WET method

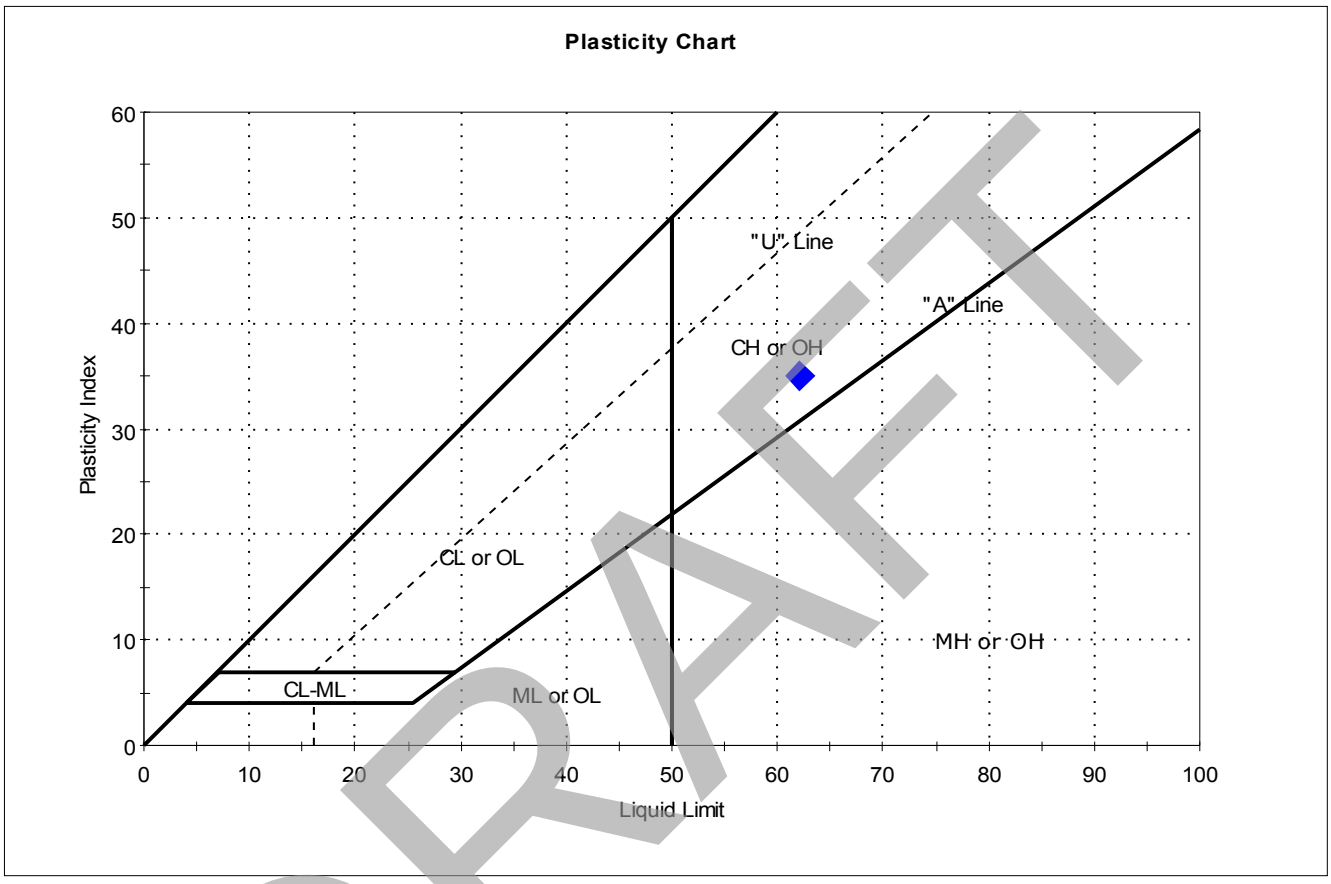
Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

Client:	GEI Consultants, Inc.				
Project:	The Enclave Additions and Renovations				
Location:	West Hartford, CT			Project No:	GTX-302782
Boring ID:	B-16	Sample Type:	bag	Tested By:	cam
Sample ID:	S-7	Test Date:	01/23/15	Checked By:	emm
Depth :	20-22 ft	Test Id:	320782		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	S-7	B-16	20-22 ft	61	62	27	35	1	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW

APPENDIX B
LANGAN BORING LOGS

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Log of Boring **LB-01** Sheet 1 of 4

Project: One Park	Project No.: 140184201
Location: 27 Park Rd, West Hartford, CT	Elevation and Datum: Approx. 63 NAVD 88
Drilling Company: Site LLC	Date Started: 5/29/18 — Date Finished: 5/29/18
Drilling Equipment: CME75	Completion Depth: 75 ft — Rock Depth: 75 ft
Size and Type of Bit: 4-1/4 in Hollow Stem Auger	Number of Samples: Disturbed 15 — Undisturbed 1 — Core - -
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 15 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: John DeAngelis
Sampler: 2-inch-diameter split spoon; Shelby Tube	Field Engineer: Taylor Sisti
Sampler Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+63.0		0					10 20 30 40	
	+62.5	Dark brown silty fine SAND, some roots (dry)[TOPSOIL]							S-1 at 0ft
		Brown SILT, trace clay, trace fine gravel (moist) [FILL]	1	S-1	SS	11	WOH 2 3 4	5	
	+61.0	Light brown varved clayey SILT, fine sand lenses (moist)	2	S-2	SS	19	4 6 7 9	13	S-2 at 2ft
			3						
			4						Auger to 5ft Easy drilling
		Light brown varved clayey SILT, fine sand lenses (moist)	5	S-3	SS	22	2 4 6 7	10	S-3 at 5ft
			6						
		Brown varved clayey SILT, fine sand lenses (moist)	7	S-4	SS	24	9 10 9 9	19	S-4 at 7ft
			8						
			9						Auger to 10ft Easy drilling
	+53.0	Brown varved CLAY, w/ silt lenses (moist)	10	S-5	SS	24	WOH 1 1 2	2	S-5 at 10ft
			11						
			12						
			13						Auger to 15ft Easy drilling
			14						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	15 ▽	S-6	SS	24	WOH WOH WOH 2		S-6 at 15ft
			16						
			17						
			18						Auger to 20ft Easy drilling
			19						
			20						

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Log of Boring **LB-01** Sheet 2 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 63 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+43.0	Brown to reddish brown varved CLAY, w/ silt lenses (wet)	20	S-7	SS	24	WOH WOH 1/12	1/12	S-7 at 20ft
			21						
			22						
			23						Auger to 25ft Easy drilling
			24						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	25	S-8	SS	24	WOR WOH WOH 1		S-8 at 25ft
			26						
			27						
			28						Auger to 30ft Easy drilling
			29						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	30	S-9	SS	24	WOR WOR WOH WOH		S-9 at 30ft
			31						
			32						
			33						Auger to 35ft Easy drilling
			34						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	35	U-1	ST	24			U-1 at 35ft
			36						
			37						
			38						Auger to 40ft Easy drilling
			39						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	40	S-10	SS	24	WOR WOR WOH WOH		S-10 at 40ft
			41						
			42						
			43						Auger to 45ft Easy drilling
			44						
			45						

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Log of Boring **LB-01** Sheet 3 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 63 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+18.0	Brown to reddish brown varved CLAY, w/ silt lenses (wet)	45	S-11	SS	24	WOR WOR WOH 1		S-11 at 45ft
			46						
			47						
			48						Auger to 50ft Easy drilling
			49						
	+13.0	Reddish brown clayey SILT, trace fine sand, trace fine gravel (wet)	50	S-12	SS	24	WOR WOR WOH WOH		S-12 at 50ft
			51						
			52						
			53						Auger to 55ft Harder drilling at 53.5ft
	+9.5		54						
		Reddish brown clayey f-c SAND, trace silt, trace fine gravel (wet)[TILL]	55	S-13	SS	13	9 9 6 9	15	S-13 at 55ft
			56						
			57						
			58						
			59						
			60						Auger to 65ft Hard drilling at 62ft
			61						
			62						
			63						
			64						
		Reddish brown clayey f-c SAND, some fine gravel, trace silt (wet)[TILL]	65	S-14	SS	5	5 13 18 22	31	S-14 at 65ft
			66						
			67						
			68						
			69						
			70						

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Log of Boring **LB-01** Sheet 4 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 63 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-7.0		70						Auger to 75ft Hard drilling
			71						
			72						Light rig chatter at 72ft and 73.5ft
			73						
			74						
	-12.1	Reddish brown SILTSTONE rock fragments	75	S-15	SS	1	50/1	50/1	S-15 at 75ft Borehole backfilled w/ auger contents to grade
			76						
			77						
			78						
			79						
			80						
			81						
			82						
			83						
			84						
			85						
			86						
			87						
			88						
			89						
			90						
			91						
			92						
			93						
			94						
			95						

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Log of Boring **LB-02** Sheet 1 of 4

Project: One Park	Project No.: 140184201
Location: 27 Park Rd, West Hartford, CT	Elevation and Datum: Approx. 56 NAVD 88
Drilling Company: Site LLC	Date Started: 5/24/18 — Date Finished: 5/24/18
Drilling Equipment: CME75	Completion Depth: 73.5 ft — Rock Depth: 68.5 ft
Size and Type of Bit: 4-1/4 in Hollow Stem Auger	Number of Samples: Disturbed 17 — Undisturbed - - — Core 1
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 15 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: John DeAngelis
Sampler: 2-inch-diameter split spoon	Field Engineer: Zachery Roller
Sampler Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+56.0									
	+55.8	3in ASPHALT								S-1 at 0ft
		Red f-c SAND, some silt, some fine gravel (dry)		1	S-1	SS	15	10, 21, 11, 5	32	
	+54.0									
		Gray varved clayey SILT, fine sand lenses, trace wood fibers (moist)		2	S-2	SS	12	3, 4, 7, 8	11	S-2 at 2ft
				3						
		Gray varved clayey SILT, fine sand lenses (moist)		4	S-3	SS	22	10, 11, 11, 11	22	S-3 at 4ft
				5						
		Gray varved clayey SILT, fine sand lenses (moist)		6	S-4	SS	20	3, 5, 6, 7	11	Auger to 6ft Easy drilling S-4 at 6ft
				7						
		Gray varved clayey SILT, fine sand lenses, trace fine gravel (moist)		8	S-5	SS	24	8, 9, 7, 8	16	S-5 at 8ft
				9						
		Gray varved clayey SILT, fine sand lenses, trace fine gravel (moist)		10	S-6	SS	24	2, 3, 3, 4	6	Auger to 10ft East drilling S-6 at 10ft
				11						
				12						Auger to 15ft Easy drilling
				13						
				14						
	+41.0			15						
		Reddish gray to brown varved CLAY w/ silt lenses (wet)		16	S-7	SS	24	WOH, WOH, WOH, WOH		S-7 at 15ft
				17						Auger to 20ft Easy drilling
				18						
				19						
				20						

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Log of Boring **LB-02** Sheet 2 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 56 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+36.0	Reddish gray to brown varved CLAY w/ silt lenses (wet)		20	S-8	SS	24	WOH WOH WOH WOH		S-8 at 20ft
				21						
				22						Auger to 25ft Easy drilling
				23						
				24						
		Reddish gray to brown varved CLAY w/ silt lenses (wet)		25	S-9	SS	24	WOH WOH WOH 1		S-9 at 25ft
				26						
				27						Auger to 30ft Easy drilling
				28						
				29						
		Reddish gray to brown varved CLAY w/ silt lenses (wet)		30	S-10	SS	24	WOR WOH WOH 1		S-10 at 30ft
				31						
				32						Auger to 35ft Easy drilling
				33						
				34						
		Reddish gray to brown varved CLAY w/ silt lenses (wet)		35	S-11	SS	24	WOH WOH 1 1		S-11 at 35ft
				36						
				37						Auger to 40ft Easy drilling
				38						
				39						
		Reddish gray to brown varved CLAY w/ silt lenses (wet)		40	S-12	SS	24	WOH WOH 1 1		S-12 at 40ft
				41						
				42						Auger to 45ft Easy drilling
				43						
				44						
	+11.0			45						

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Log of Boring **LB-02** Sheet 3 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 56 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+11.0	Reddish brown clayey SILT, trace f-m sand (wet)		45	S-13	SS	24	WOR WOR 1 4		S-13 at 45ft
				46						
				47						Auger to 50ft Easy drilling
				48						
				49						
		Reddish brown clayey SILT, trace f-m sand (wet)		50						S-14 at 50ft
	+4.5			51	S-14A	SS	20	WOR WOR WOH		
		Reddish brown clayey f-c SAND, some silt, some fine gravel (wet)[TILL]		52	S-14B			16		Auger to 55ft Easy to moderate drilling
				53						
				54						
		Reddish brown clayey f-c SAND, some silt, some fine gravel (wet)[TILL]		55	S-15	SS	15	12 10 9 22	19	S-15 at 55ft
				56						
				57						Auger to 60ft Moderate drilling
				58						
				59						
		Reddish brown clayey f-c SAND, some silt, some fine gravel (wet)[TILL]		60	S-16	SS	12	10 19 44 48	63	S-16 at 60ft
				61						
				62						Auger to 65ft Moderate to hard drilling
				63						Heavy grinding around 63ft
				64						
		Reddish brown silty f-c SAND, some fine gravel (wet)[TILL]		65	S-17	SS	12	37 52 61/4		S-17 at 65ft
				66					61/4	
				67						Auger to 70ft Very hard drilling
				68						
	-12.5	Reddish PORTLAND ARKOSE	4:38	69	C-1	NX Core				Auger and split spoon refusal at 68.5ft. C-1 at 68.5ft
				70						

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Log of Boring **LB-02** Sheet 4 of 4

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 56 NAVD 88

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-14.0		3:59	70					10 20 30 40	
		Reddish PORTLAND ARKOSE	5:13	71	C-1	NX Core	REC=60"/60" =100%	RQD=40"/60" =67%		
			3:58	72						
	-17.5		4:29	73						Borehole backfilled w/ auger contents to grade
				74						
				75						
				76						
				77						
				78						
				79						
				80						
				81						
				82						
				83						
				84						
				85						
				86						
				87						
				88						
				89						
				90						
				91						
				92						
				93						
				94						
				95						

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Log of Boring **LB-03** Sheet 1 of 3

Project: One Park	Project No.: 140184201
Location: 27 Park Rd, West Hartford, CT	Elevation and Datum: Approx. 57 NAVD 88
Drilling Company: Site LLC	Date Started: 5/25/18 — Date Finished: 5/25/18
Drilling Equipment: CME75	Completion Depth: 62 ft — Rock Depth: 62 ft
Size and Type of Bit: 4-1/4 in Hollow Stem Auger	Number of Samples: Disturbed 13, Undisturbed 1, Core - -
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 15, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: John DeAngelis
Sampler: 2-inch-diameter split spoon; Shelby Tube	Field Engineer: Zachery Roller
Sampler Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+57.0		0						
	+56.5	Reddish brown m-c SAND, some silt, trace fine gravel, trace asphalt (dry)[FILL]	1	S-1A	SS	18	27 / 8 / 6 / 4	14	S-1 at 0ft
	+55.0	Gray varved clayey SILT, w/ fine sand lenses (dry)	2	S-1B					S-2 at 2ft
		Gray varved clayey SILT, w/ fine sand lenses (dry)	3	S-2	SS	12	4 / 5 / 6 / 6	11	
			4						Auger to 5ft Easy drilling
		Brown varved clayey SILT, w/ fine sand lenses, trace fine gravel, trace wood fibers (dry)	5	S-3	SS	22	2 / 4 / 3 / 5	7	S-3 at 5ft
		Gray varved clayey SILT, w/ fine sand lenses (dry)	7	S-4	SS	24	8 / 8 / 8 / 9	16	S-4 at 7ft
			9						Auger to 10ft Easy drilling
		Gray varved clayey SILT, w/ fine sand lenses (moist)	10	S-5	SS	24	2 / 2 / 2 / 4	4	S-5 at 10ft
	+45.0		12						
			14						
		Reddish brown varved CLAY, w/ silt lenses (wet)	15	S-6	SS	24	WOH / 1/12	1/12	S-6 at 15ft
			17						Auger to 20ft Easy drilling
			18						
			19						
			20						

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Log of Boring **LB-03** Sheet 2 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 57 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+37.0	Reddish brown varved CLAY, w/ silt lenses (wet)	20	U-1	ST	24			U-1 at 20ft
			21						
			22						Auger to 25ft Easy drilling
			23						
			24						
		Reddish brown varved CLAY, some silt (wet)	25	S-7	SS	24	WOR WOH		S-7 at 25ft
			26				WOH 1		
			27						Auger to 30 ft Easy drilling
			28						
			29						
		Reddish brown varved CLAY, w/ silt lenses (wet)	30	S-8	SS	24	WOR WOH		S-8 at 30ft
			31				WOH WOH		
			32						Auger to 35ft Easy drilling
			33						
			34						
		Reddish brown varved CLAY, w/ silt lenses (wet)	35	S-9	SS	24	WOR WOR		S-9 at 35ft
			36				WOH WOH		
			37						Auger to 40ft Easy drilling
			38						
			39						
	+17.0		40	S-10	SS	14	WOR WOH		S-10 at 40ft
		Reddish brown CLAY, some f-c sand, trace silt, trace fine gravel (wet)	41				1 3		
			42						Auger to 45ft Moderate drilling
	+14.0		43						Grinding at 43ft
			44						
			45						

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Log of Boring **LB-03** Sheet 3 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 57 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+12.0	Reddish brown clayey f-c SAND, some fine gravel, some silt, some rock fragments (wet)[TILL]	45	S-11	SS	16	6 10 18 26	28	S-11 at 45ft
			46						
			47						Auger to 55ft Heavy to moderate drilling
			48						
			49						
			50						
			51						
			52						Heavy drilling around 53ft
			53						
			54						
		Reddish brown varved SILT, w/ fine sand lenses, some m-c sand (wet)[TILL]	55	S-12	SS	18	8 6 5 8	11	S-12 at 55ft
			56						
			57						Auger to 65ft Moderate to heavy drilling
			58						
			59						Heavy grinding around 59.0 ft
		Reddish brown f-m SAND, some silt (wet)[TILL]	60	S-13	SS	18	13 23 26 23	49	S-13 at 60ft
	-5.0		61						
			62						Borehole backfilled w/ auger contents to grade
			63						
			64						
			65						
			66						
			67						
			68						
			69						
			70						

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Log of Boring **LB-04** Sheet 1 of 3

Project: One Park	Project No.: 140184201
Location: 27 Park Rd, West Hartford, CT	Elevation and Datum: Approx. 58 NAVD 88
Drilling Company: Site LLC	Date Started: 5/29/18 / Date Finished: 5/30/18
Drilling Equipment: CME75	Completion Depth: 63.5 ft / Rock Depth: 63.5 ft
Size and Type of Bit: 4-1/4 in Hollow Stem Auger	Number of Samples: Disturbed 14, Undisturbed - -, Core - -
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 15, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: John DeAngelis
Sampler: 2-inch-diameter split spoon; Shelby Tube	Field Engineer: Taylor Sisti
Sampler Hammer: Automatic / Weight (lbs): 140 / Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+58.0		0						
	+57.7	3" ASPHALT							S-1 at 0ft
		Dark brown f-c SAND, trace silt, trace gravel, with brick and rock fragments (moist)[FILL]	1	S-1	SS	14	16 14 9 8	23	
			2	S-2A	SS	20	4 5	9	S-2A and S-2B at 2ft
		Dark brown clayey SILT, trace fine gravel, with synthetic fibers (moist)[FILL]	3	S-2B			4 6		
	+53.5		4						Auger to 5ft Easy drilling
		Brown to reddish brown varved clayey SILT, trace fine sand (moist)	5	S-3	SS	24	2 3		S-3 at 5ft
			6				6 6	9	
		Brown to reddish brown varved clayey SILT, trace fine sand, trace fine gravel (moist)	7	S-4	SS	24	8 8		S-4 at 7ft
			8				8 9	16	
			9						Auger to 10ft Easy drilling
	+48.0		10						S-5 at 10ft
		Brown to reddish brown varved CLAY, w/ silt lenses, trace fine gravel (moist)	11	S-5	SS	24	1 2 3 3	5	
			12						
			13						
			14						Auger to 15ft Easy drilling
			15						S-6 at 15ft
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	16	S-6	SS	24	WOH 1/12		
			17					1/12	
			18						Auger to 20ft Easy drilling
			19						
			20						

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Log of Boring **LB-04** Sheet 2 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 58 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+38.0	Brown to reddish brown varved CLAY, w/ silt lenses (wet)	20	S-7	SS	24	WOH WOH WOH 1		S-7 at 20ft
			21						
			22						
			23						Auger to 25ft Easy drilling
			24						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	25	S-8	SS	24	WOR WOH WOH 1		S-8 at 25ft
			26						
			27						
			28						Auger to 30ft Easy drilling
			29						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	30	S-9	SS	24	WOR WOR WOH WOH		S-9 at 30ft
			31						
			32						
			33						Auger to 35ft Easy drilling
			34						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	35	S-10	SS	24	WOR WOH WOH 1		S-10 at 35ft
			36						
			37						
			38						Auger to 40ft Easy drilling Harder drilling 38-38.5ft
			39						
		Brown to reddish brown varved CLAY, w/ silt lenses (wet)	40	S-11	SS	24	WOH WOH WOH WOH		S-11 at 40ft
			41						
			42						
			43						Auger to 45ft Easy drilling
			44						
	+13.0		45						Harder drilling at 45ft

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Log of Boring **LB-04** Sheet 3 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 58 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+13.0	Reddish brown clayey f-c SAND, trace silt, trace fine gravel (wet)[TILL]	45	S-12	SS	12	4 13 14 13	27	S-12 at 45ft
			46						
			47						
			48						
			49						
			50						Auger to 55ft Medium-hard drilling
			51						
			52						
			53						
			54						
		Reddish brown clayey f-c SAND, trace silt, trace f-c gravel (wet)[TILL]	55	S-13	SS	24	13 34 45 41	79	S-13 at 55ft
			56						
			57						
			58						
			59						
			60						Auger to 65ft Medium-hard drilling
			61						
			62						
			63						Hard drilling at 63ft
	-5.6	Reddish brown SILTSTONE, rock fragments	64	S-14	SS	1	50/1	50/1	S-14 at 63.5ft Spoon bouncing Borehole backfilled w/ auger contents to grade
			65						
			66						
			67						
			68						
			69						
			70						

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Log of Boring **LB-05** Sheet 1 of 3

Project: One Park	Project No.: 140184201
Location: 27 Park Rd, West Hartford, CT	Elevation and Datum: Approx. 57 NAVD 88
Drilling Company: Site LLC	Date Started: 5/24/18 — Date Finished: 5/25/18
Drilling Equipment: CME75	Completion Depth: 59.5 ft — Rock Depth: 54.5 ft
Size and Type of Bit: 4-1/4 in Hollow Stem Auger	Number of Samples: Disturbed 17 — Undisturbed - - — Core 1
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 10 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: John DeAngelis
Sampler: 2-inch-diameter split spoon; Shelby Tube	Field Engineer: Zachery Roller
Sampler Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description
	+57.0	Dark brown silty fine SAND, some roots (dry)[TOPSOIL]
	+56.0	Light gray varved clayey SILT, fine sand lenses, some wood fiber (dry) Brown varved clayey SILT, fine sand lenses, trace wood fibers (dry)
	+52.0	Reddish brown varved CLAY w/ silt lenses (moist)
		Reddish brown varved CLAY w/ silt lenses (moist)
		Reddish brown varved CLAY w/ silt lenses (moist)
		Reddish brown varved CLAY w/ silt lenses (moist)

Coring (min)

Depth Scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Sample Data

Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)
S-1A	SS	12	2 2 3	5
S-1B			4	
S-2	SS	20	4 5 4 6	9
S-3	SS	22	2 3 5 4	8
S-4	SS	24	5 2 4 4	6
U-1	ST	24		
S-5	SS	24	WOH 1 WOH 1	

N-Value (Blows/ft): 10 20 30 40

Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)

Started Drilling at 5/24/2018 1:48 PM. S-1 at 0ft

S-2 at 2ft

S-3 at 5ft

S-4 at 7ft

Auger to 10ft
Easy drilling

U-1 at 10ft

Auger to 15ft
Easy drilling

S-5 at 15ft

Auger to 20ft
Easy drilling

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Log of Boring **LB-05** Sheet 2 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 57 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+37.0	Reddish brown to gray varved CLAY w/ silt lenses (wet)		20	S-6	SS	24	WOH WOH 1 1		S-6 at 20ft
				21						
				22						
				23						
				24						
		Reddish brown varved CLAY w/ silt lenses (moist)		25	S-7	SS	24	WOH WOH 1 1		S-7 at 25ft
				26						
				27						
				28						
				29						
	+27.0	Reddish brown clayey SILT, trace f-m sand (wet)		30	S-8	SS	24	WOH WOH 1 1		S-8 at 30ft
				31						
				32						
				33						
	+23.0			34						Grinding at 34ft
		Red clayey f-c SAND, some fine gravel, trace clay (moist)[TILL]		35	S-9	SS	18	4 10 12 16	22	S-9 at 35ft
				36						
				37						Auger to 40ft Moderate drilling
				38						
				39						
		Red clayey f-c SAND, some silt, some fine gravel (wet)[TILL]		40	S-10	SS	24	10 19 24 26	43	S-10 at 40ft
				41						
				42						Auger to 50ft Moderate drilling
				43						
				44						
				45						

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Log of Boring **LB-05** Sheet 3 of 3

Project	Project No.
One Park	140184201
Location	**Elevation and Datum**
27 Park Rd, West Hartford, CT	Approx. 57 NAVD 88

Material Symbol	Elev. (ft)	Sample Description	Coring (min)	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+12.0	Red clayey f-c SAND, some silt, some fine gravel (wet)[TILL]		45–70	S-11A S-11B	SS	16	6 8 17 8	25	S-11 at 50ft Auger to 60ft Very heavy drilling C-1 at 52ft
	+2.5	PORTLAND ARKOSE	3:25 4:40 3:59 5:42 5:12		C-1	NX Core	REC=60"/60" =100%	RQD=44"/60" =73%		Auger and split spoon refusal at 54.5 Core from 54.5ft to 59.5ft
	-2.5									

APPENDIX C
LANGAN TEST PIT LOGS

LOG OF TEST PIT TP-01

PROJECT NAME	PROJECT NUMBER	DATE
One Park	140184201	5/29/2018
LOCATION	**ELEVATION**	
27 Park Rd, West Hartford, CT	Approx. 54 NAVD 88	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
Polster Industries LLC	6 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 304 Mini-Excavator	Patick Polster	Zachery Roller

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+54.0	Dark brown silty fine SAND, some roots (dry)[TOPSOIL]	0			
	+53.5					Vertical sidewalls were maintained
			1			
			2			
		Light brown varved clayey SILT, trace fine sand (moist)	3			Infiltration test performed at 3ft
			4			
			5			
	+48.0	Bottom Of Boring	6			Test pit backfilled in 1'-2' bucket compact lifts, with previously excavated soil
			7			
			8			
			9			
			10			
			11			
			12			
			13			
			14			
			15			

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LOG OF TEST PIT TP-04

PROJECT NAME	PROJECT NUMBER	DATE
One Park	140184201	5/29/2018
LOCATION	**ELEVATION**	
27 Park Rd, West Hartford, CT	Approx. 60 NAVD 88	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
Polster Industries LLC	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 304 Mini-Excavator	Patick Polster	Zachery Roller

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+60.0	3in Asphalt	0			Vertical sidewalls where maintained
		Gray to brown CLAY, some silt, some fine gravel (dry)[FILL]	1–5			
	+54.0	Light brown varved clayey SILT, trace fine sand (moist)	6–7			Test pits excavated to explore existing foundation conditions. Refer to test pit sketches for further information.
	+52.0	Bottom Of Boring	8			Test pit backfilled in 1'-2' bucket compact lifts, with previously excavated soil
			9–15			

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LOG OF TEST PIT TP-05

PROJECT NAME	PROJECT NUMBER	DATE
One Park	140184201	5/29/2018
LOCATION	**ELEVATION**	
27 Park Rd, West Hartford, CT	Approx. 57.5 NAVD 88	
EXCAVATION CONTRACTOR	**DEPTH**	**WATER LEVEL - First** / **WATER LEVEL - Completion**
Polster Industries LLC	8 ft	N/E ▽ / N/A ▼
EQUIPMENT	**FOREMAN**	**LANGAN PERSONNEL**
CAT 304 Mini-Excavator	Patick Polster	Zachery Roller

Symbol	ELEV (feet)	DESCRIPTION	Depth Scale	SAMPLE Number	SAMPLE Type	REMARKS
	+57.5	3in Asphalt	0			Vertical sidewalls where maintained
		Red brown to tan f-m SAND, some silt, some fine gravel (dry)[FILL]	1 2 3 4 5 6			Test pits excavated to explore existing foundation conditions. Refer to test pit sketches for further information.
	+51.5	Light brown varved clayey SILT, trace fine sand (moist)	7 8			
	+49.5	Bottom Of Boring	9 10 11 12 13 14 15			Test pit backfilled in 1'-2' bucket compact lifts, with previously excavated soil

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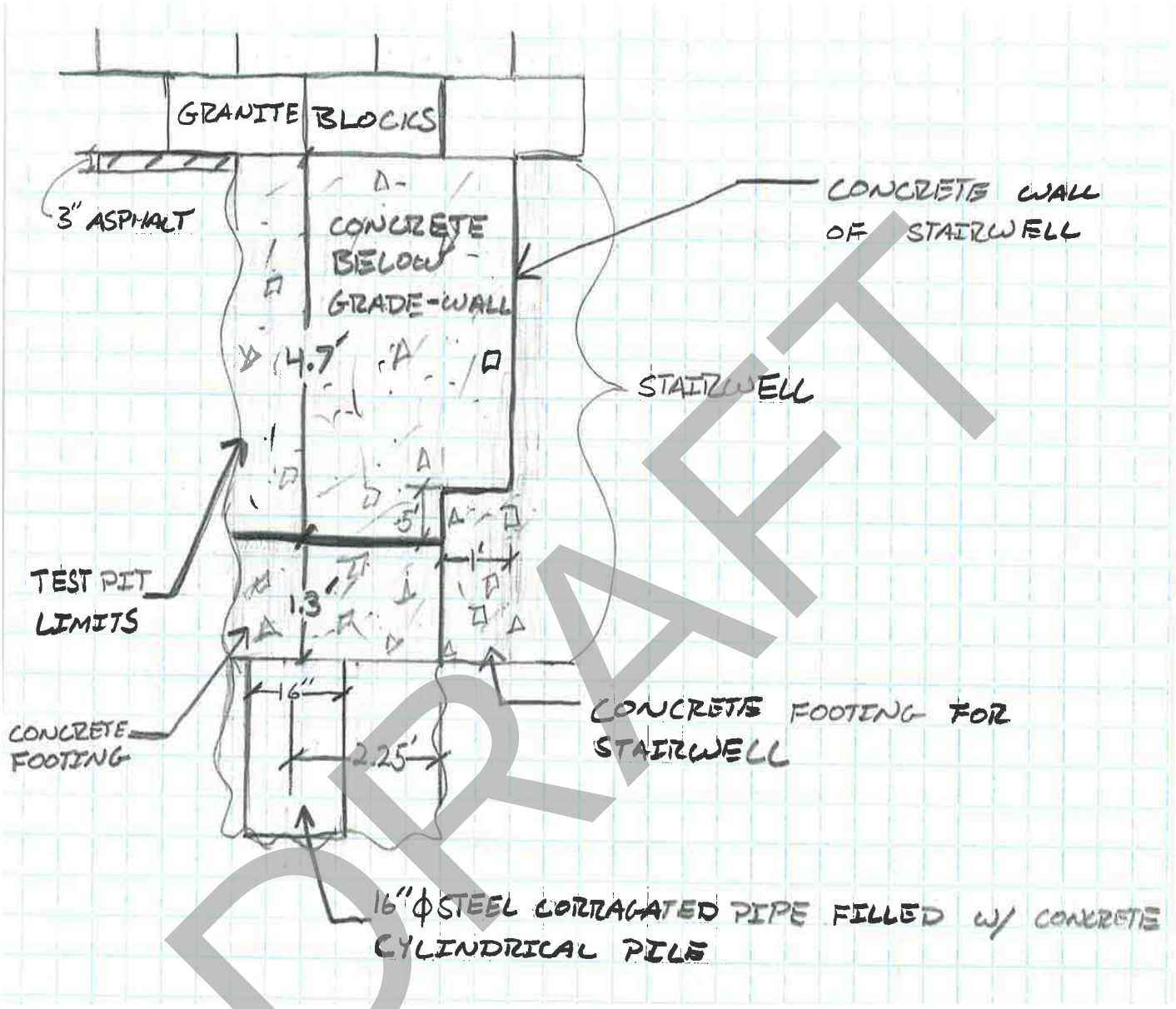
APPENDIX D
LANGAN TEST PIT SKETCH - TP-04



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Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-04
SKETCH
FACING NORTH

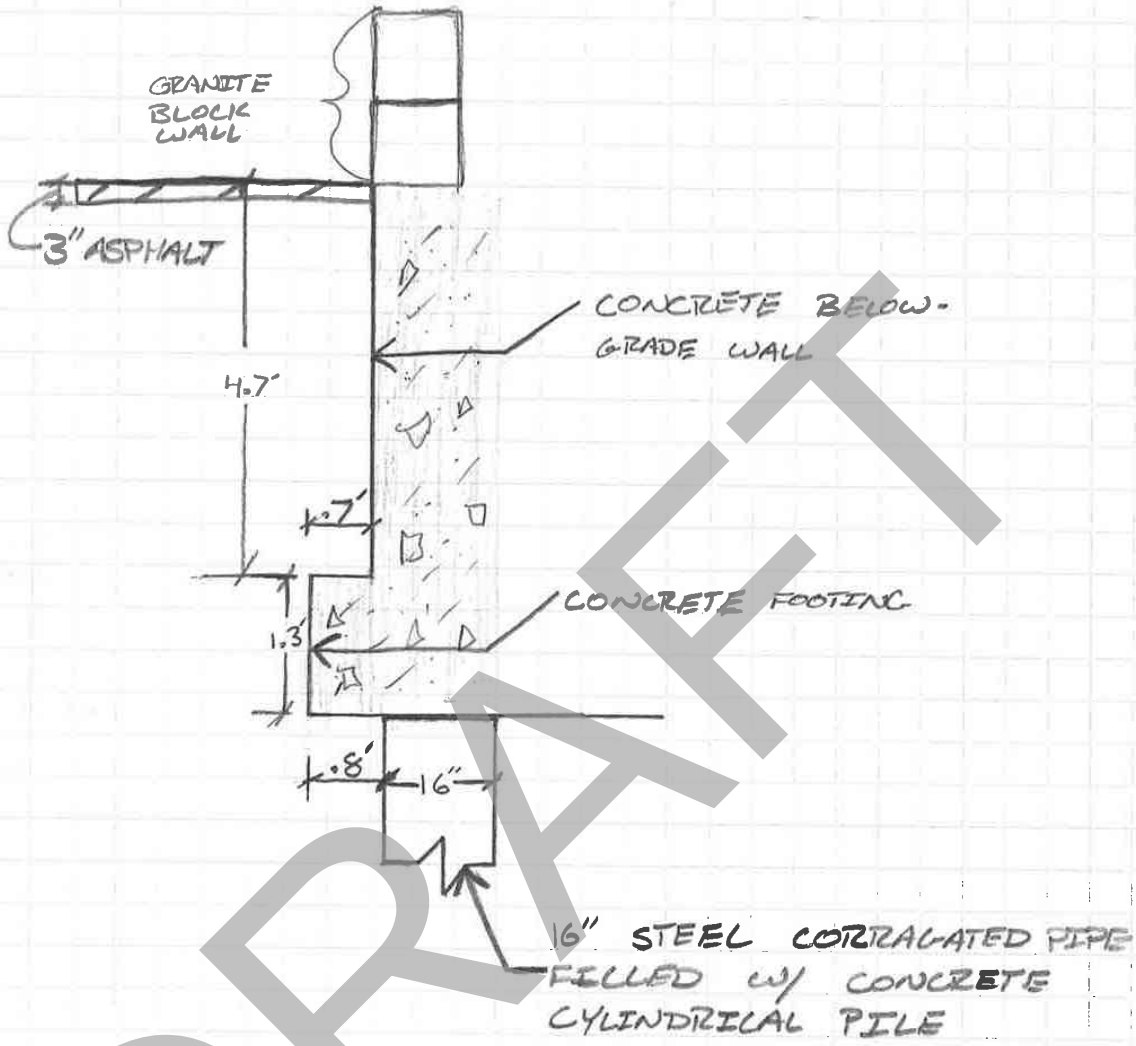
Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
1



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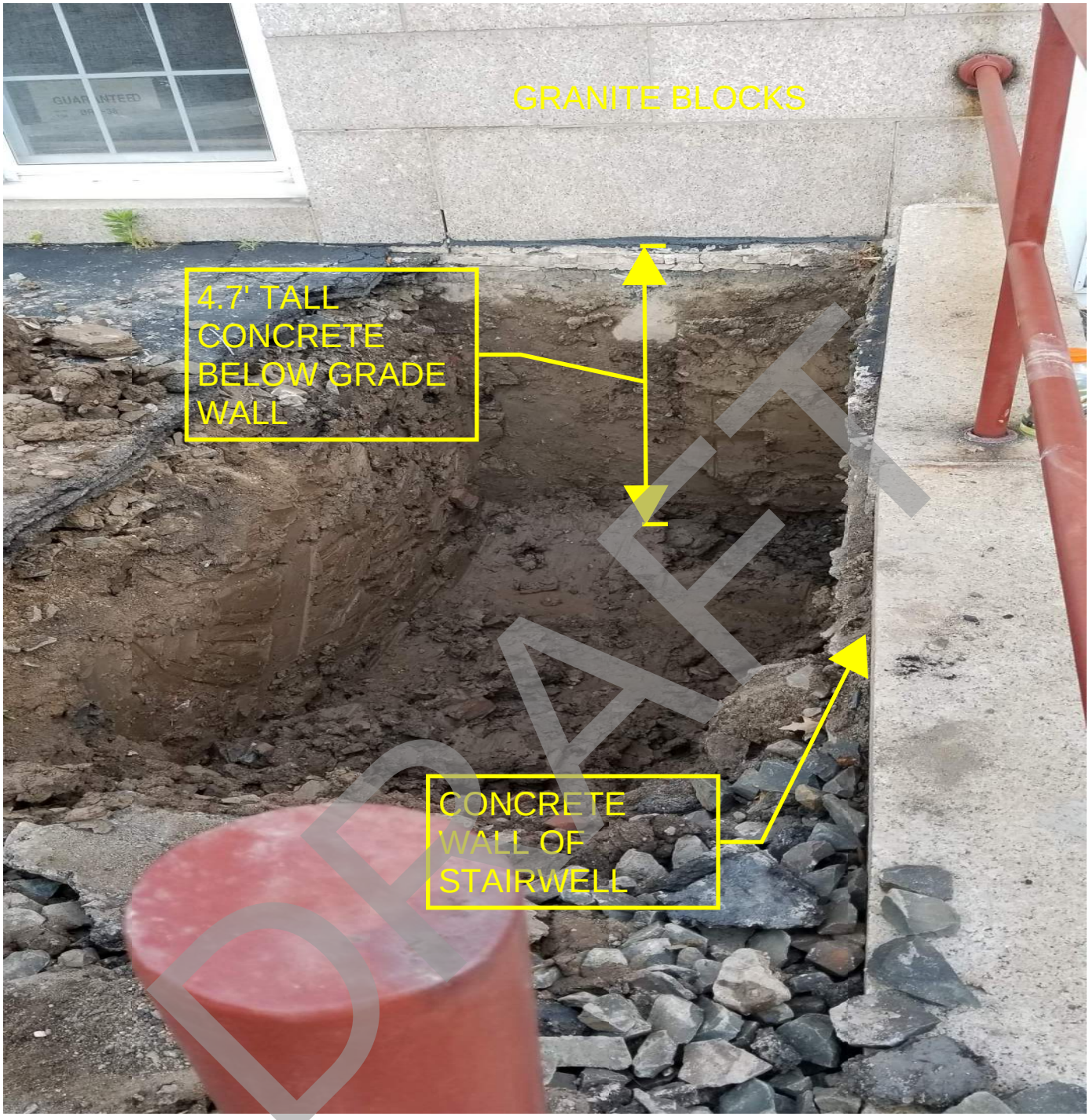

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Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-04
PROFILE VIEW
FACING NORTH

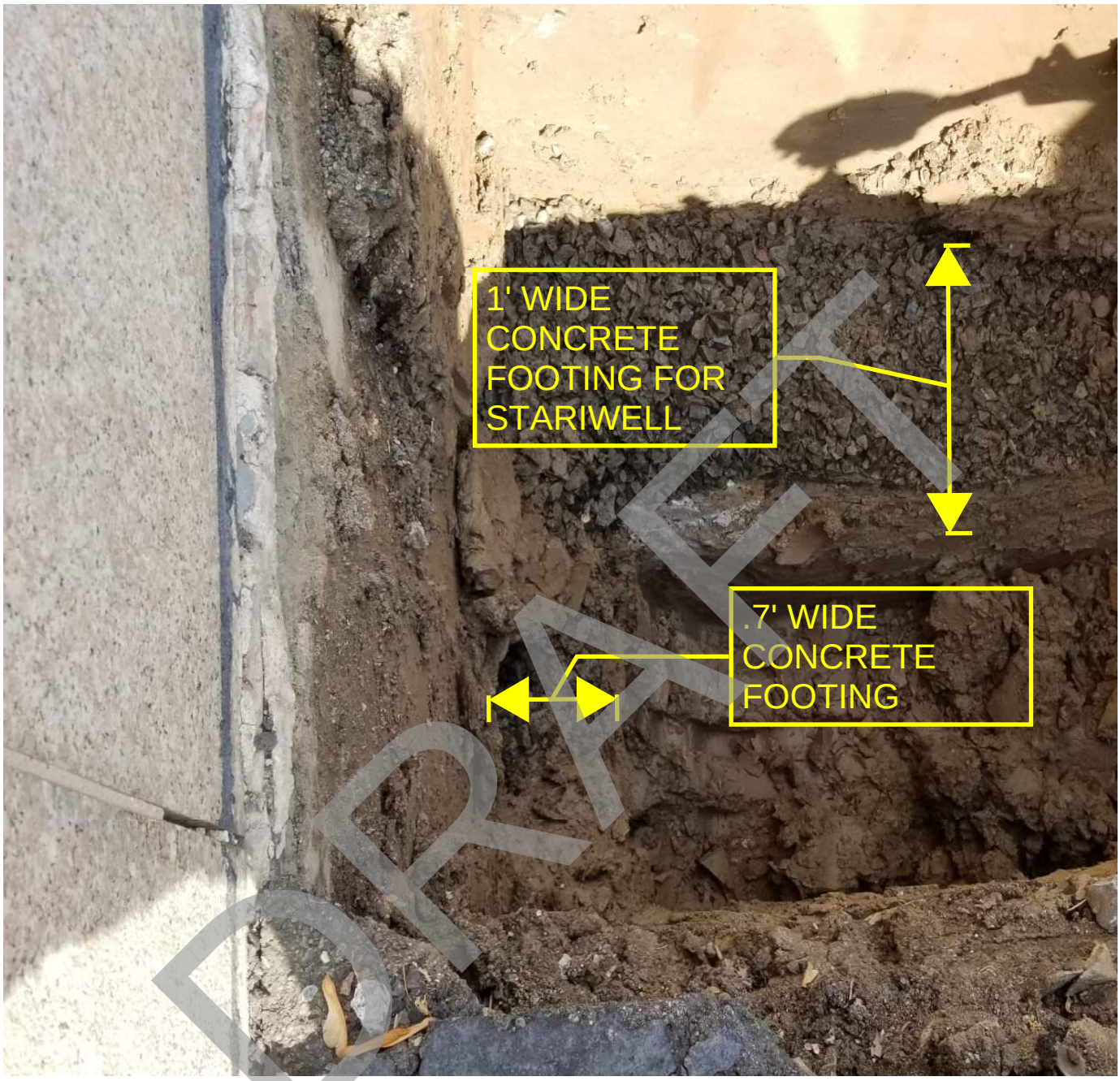
Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
3



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ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-04
PLAN VIEW

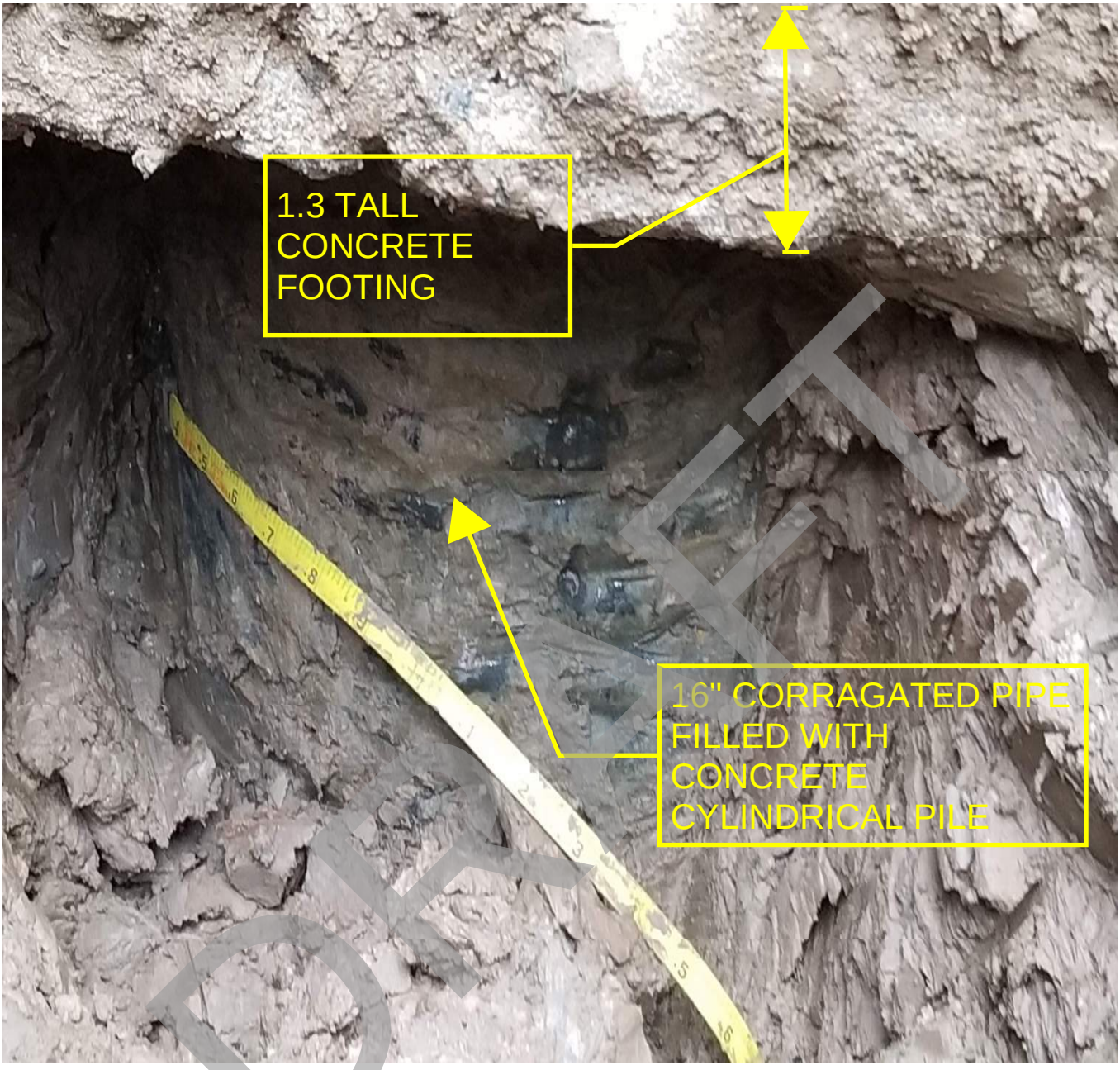
Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
4



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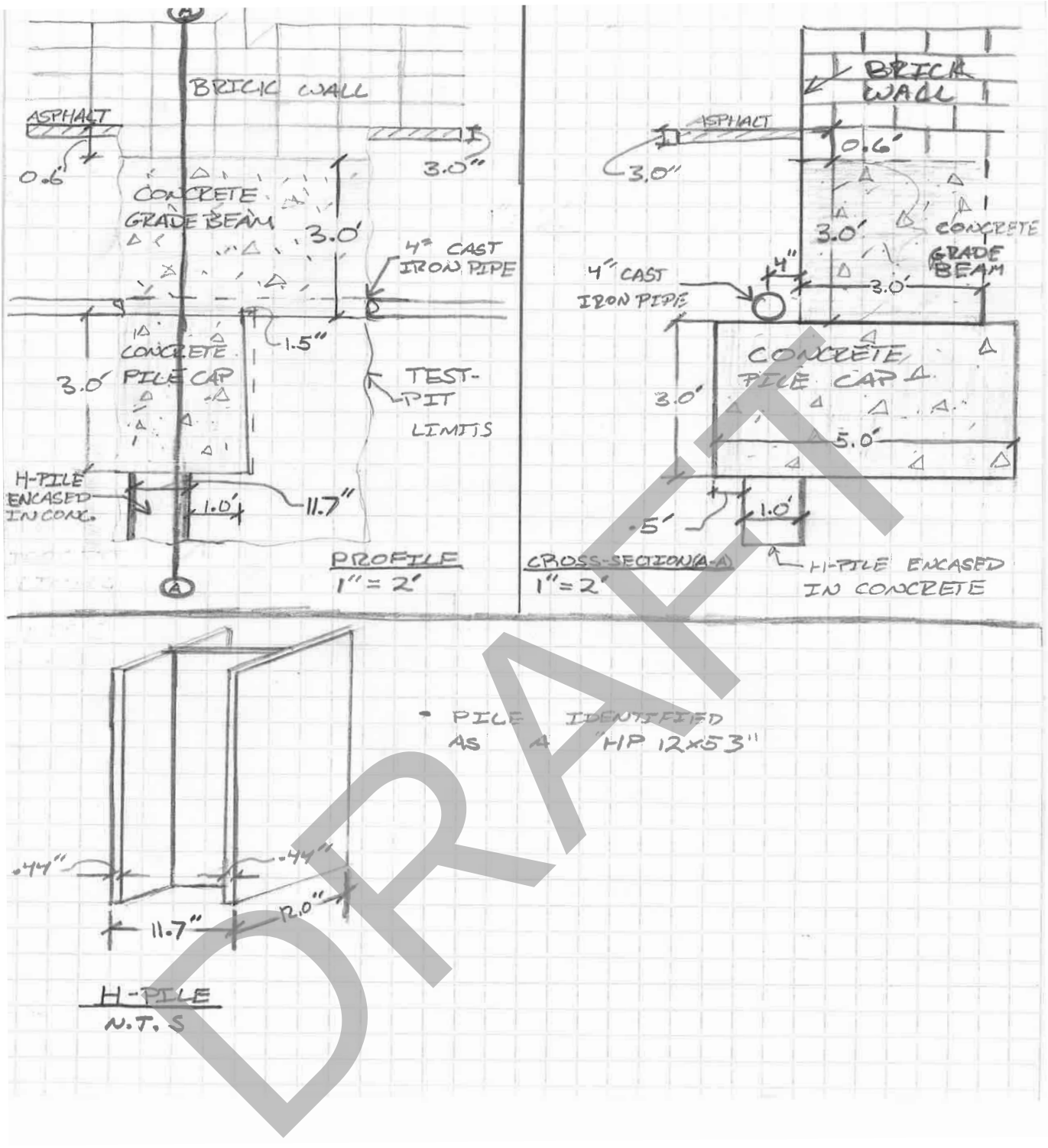
Project	Drawing Title	Project No.	Drawing No.
ONE PARK 27 PARK ROAD WEST HARTFORD CT	TP-04 PROFILE VIEW FACING NORTH	140184201 Date: 30 MAY 2018 Scale: NTS Drawn By: ZDR	5

APPENDIX E
LANGAN TEST PIT SKETCH - TP-05



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Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

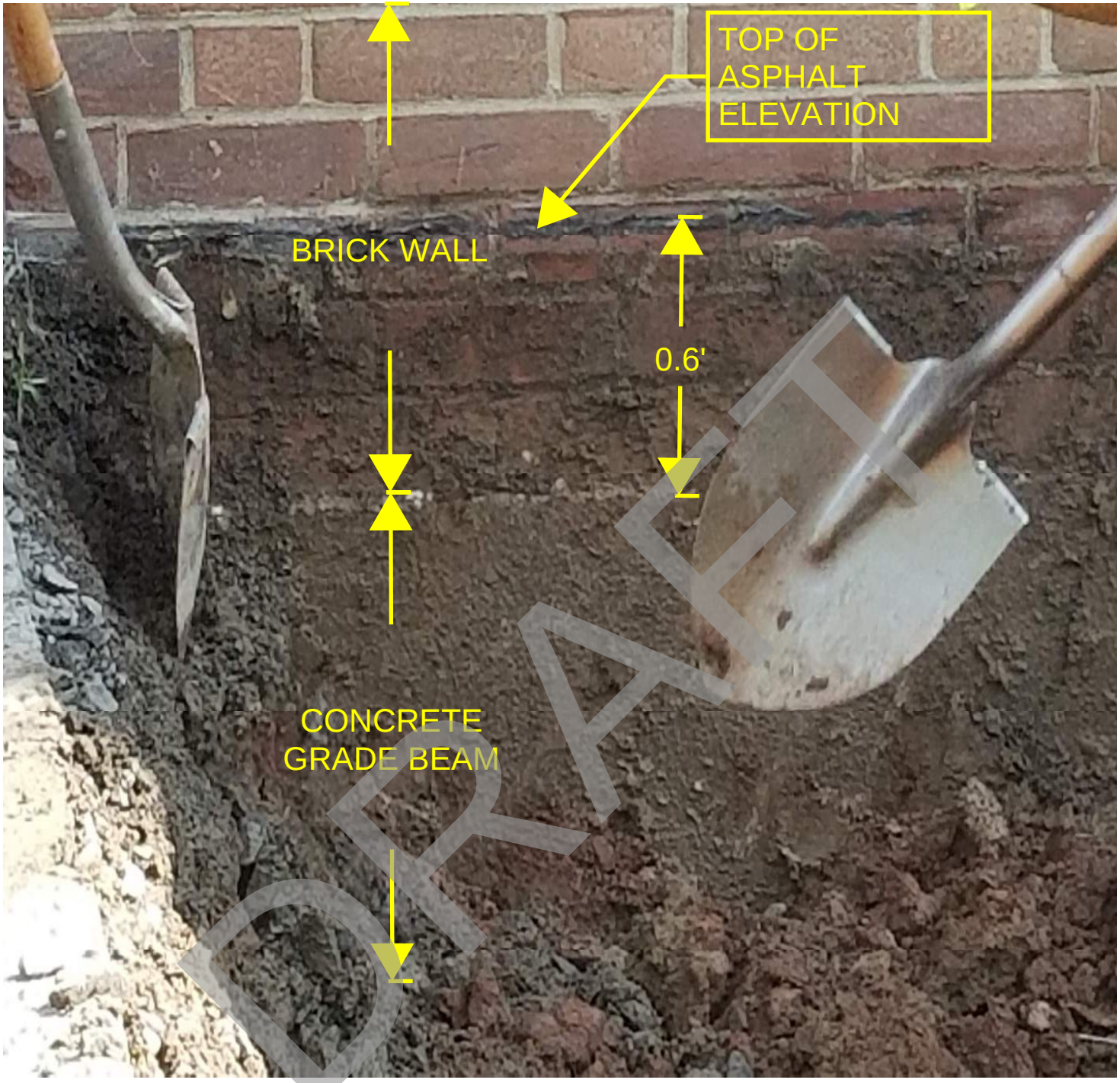
Drawing Title

TP-05
SKETCHES

Project No.	140184201
Date	30 MAY 2018
Scale	NTS
Drawn By	ZDR

Drawing No.

1



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Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-05
PROFILE VIEW
FACING NORTH

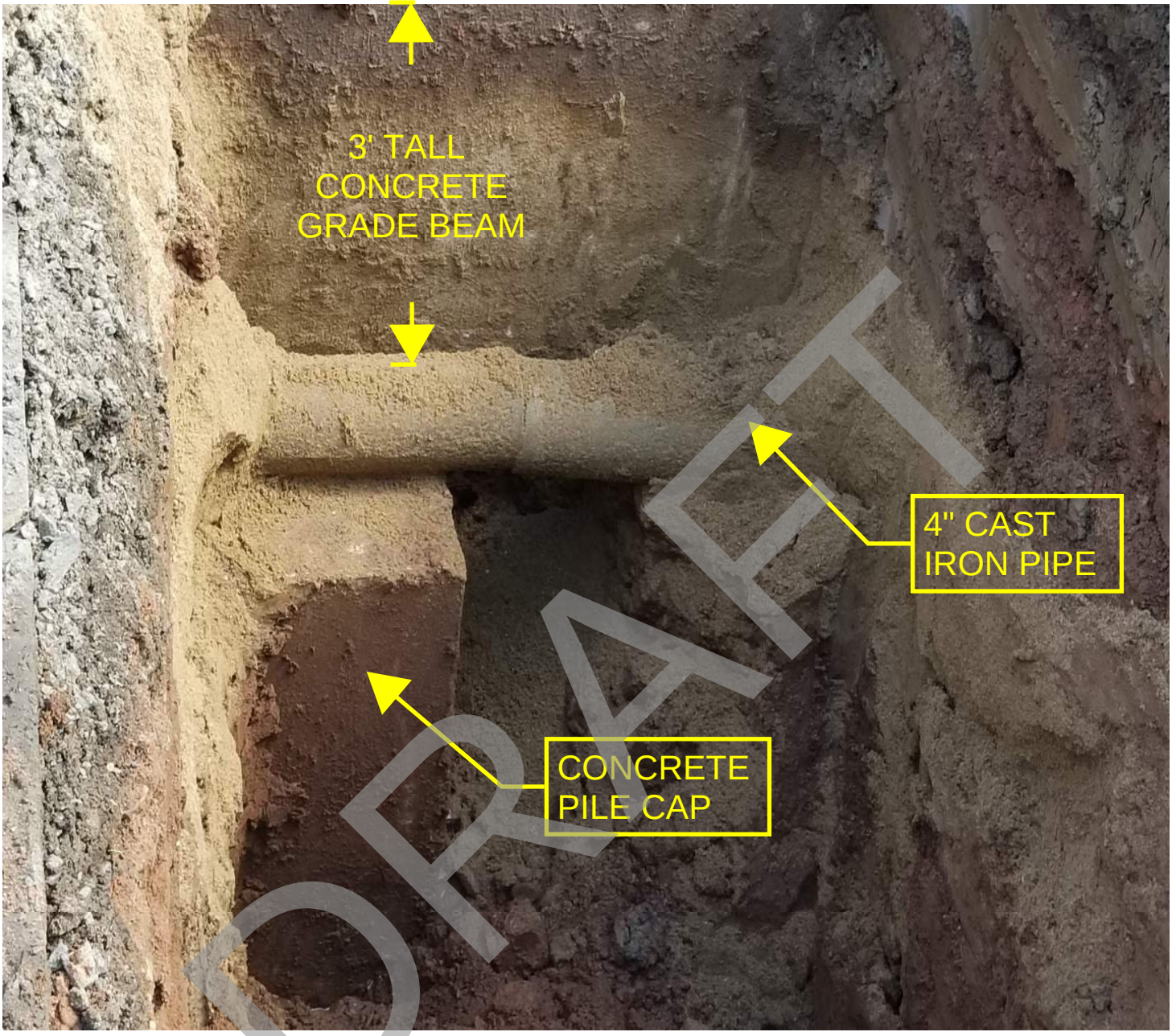
Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
2



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Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-05
PROFILE VIEW
FACING NORTH

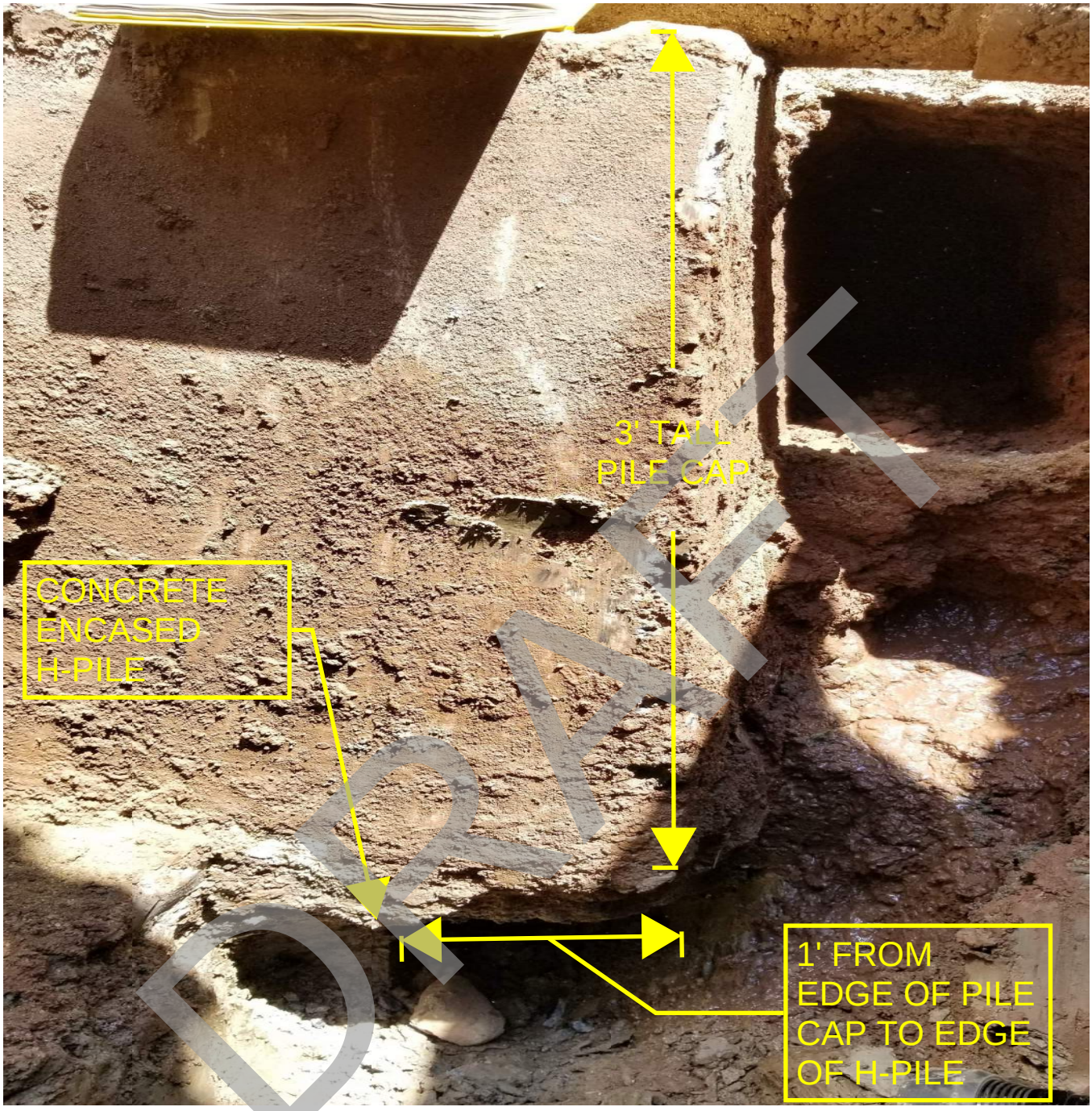
Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
3



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Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC

Collectively Known as Langan

Project

ONE PARK

27 PARK ROAD

WEST HARTFORD CT

Drawing Title

TP-05
PROFILE VIEW
FACING NORTH

Project No.
140184201

Date
30 MAY 2018

Scale
NTS

Drawn By
ZDR

Drawing No.
4

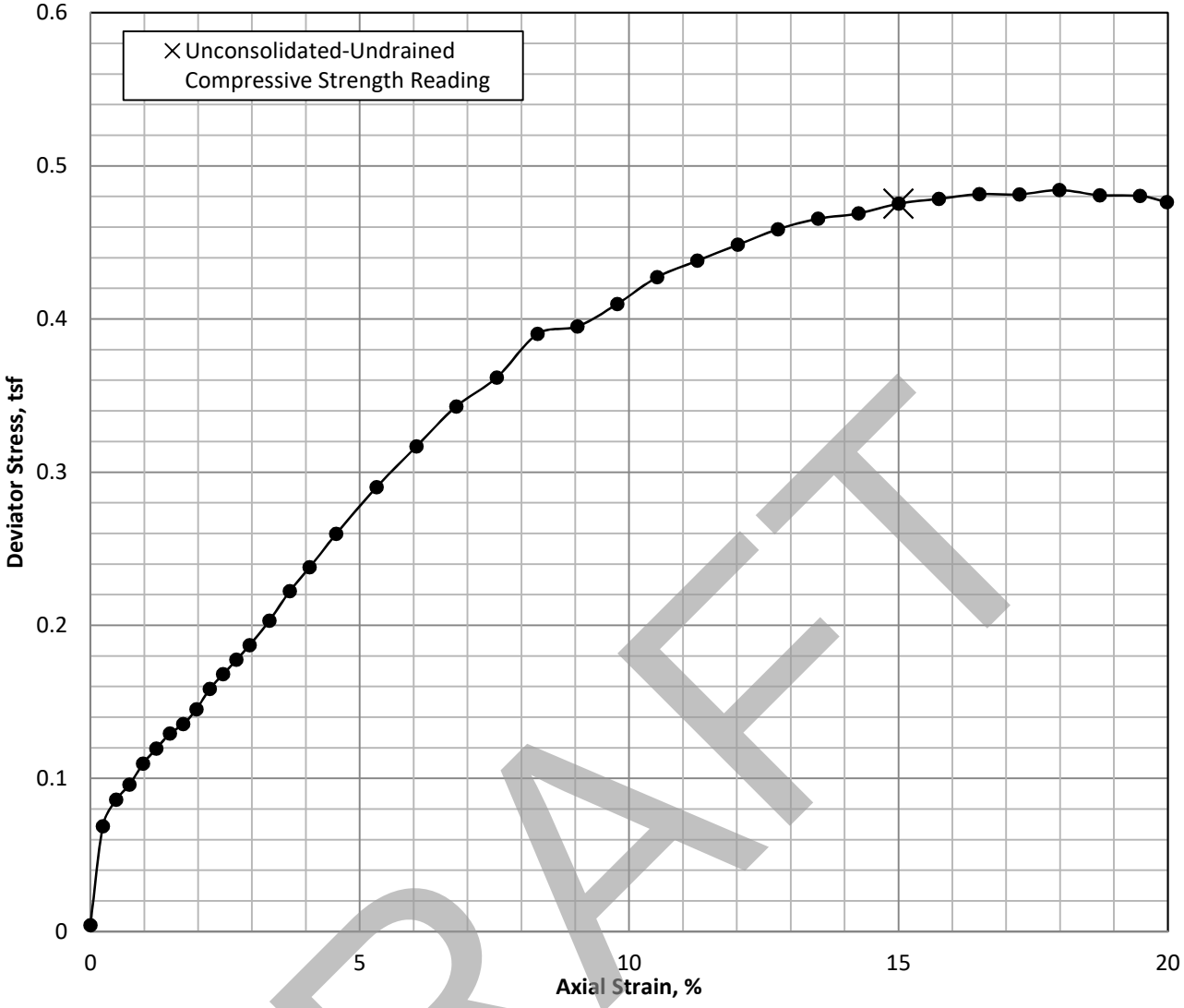
APPENDIX F
LABORATORY TEST RESULTS

Langan Engineering #140184201
One Park - West Hartford, CT
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS				STRENGTH			REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	Type Test	PEAK DEVIATOR STRESS (tsf)	AXIAL STRAIN @ PEAK STRESS (%)	
LB-01	U-1	35-37			109.5					
LB-01	U-1	35.25	67.1							
LB-01	U-1	35.8	59.7							
LB-01	U-1	36.35	54.7							
LB-01	U-1C	36.6	48.6	CL	110.6	74.4	UU@1.9	0.5	15.0	UU152d
LB-03	U-1	20-22			110.6					
LB-03	U-1	20.35	48.3							
LB-03	U-1	20.9	46.4							
LB-03	U-1	21.45	68.7							
LB-03	U-1C	21.7	46.3	CL	112.1	76.6	UU@1.1	0.7	15.0	UU152c
LB-05	U-1	10-12			113.0					
LB-05	U-1	10.2	59.9							
LB-05	U-1	10.75	38.5							
LB-05	U-1	11.3	54.2							
LB-05	U-1B	11.05	45.2	CL	112.8	77.7	UU@0.6	0.8	15.0	UU152a

Note: (1) USCS symbol based on visual observation.

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

Sample Type: Intact tube sample

Description and/or Classification: CL, brown clay; layering noted

Cell Pressure (tsf)	Water Content (1) (%)	Wet Unit Weight (pcf)	Dry Unit Weight (1) (pcf)	Void Ratio (-)	Saturation (2) (%)	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (2) (-)
0 (Initial)	48.6	110.6	74.4	1.39	99.5	5.971	2.861	2.1			2.85
1.9	48.6	110.9	74.6	1.39	100.0	5.965	2.858	2.1			

Failure Summary

U-U Compressive Strength (tsf)	U-U Shear Strength, s_u (tsf)	Strain to Peak (%)	Strain Rate (%/min)
0.48	0.24	15.0	0.74

FAILURE SKETCH

Remarks and Notes:

(1) Water Content determined after shear from partial specimen.

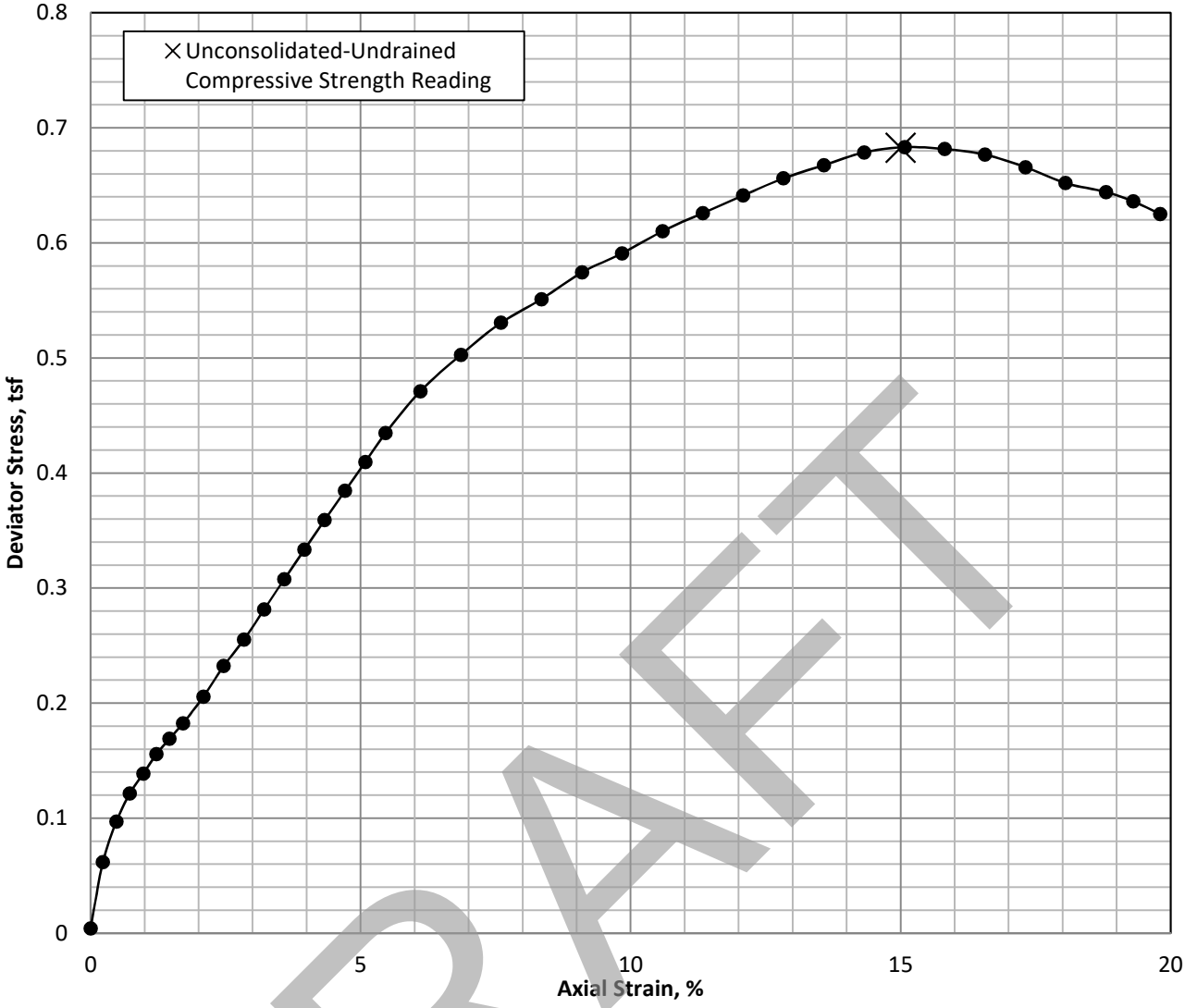
(2) Assumed specific gravity

Tested by: BB Reviewed by: CMJ

Test Date: 6/1/2018 Review Date: 6/7/2018

Langan Engineering **Project # 140184201**	**One Park** **West Hartford, CT**	**UNCONSOLIDATED-UNDRAINED COMPRESSION TEST**
TerraSense, LLC **Project # 7920-825**		**Boring: LB-01 Sample: U-1** **Section: C Depth: 36.6 ft.**

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

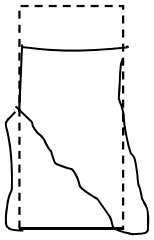
Sample Type: Intact tube sample

Description and/or Classification: CL, brown clay; layering noted

Cell Pressure (tsf)	Water Content (1) (%)	Wet Unit Weight (pcf)	Dry Unit Weight (1) (pcf)	Void Ratio (-)	Saturation (2) (%)	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (2) (-)
0 (Initial)	46.3	112.1	76.6	1.36	98.8	5.986	2.861	2.1			2.89
1.1	46.3	112.9	77.2	1.34	100.0	5.972	2.854	2.1			

Failure Summary

U-U Compressive Strength (tsf)	U-U Shear Strength, s_u (tsf)	Strain to Peak (%)	Strain Rate (%/min)
0.68	0.34	15.0	0.75



FAILURE SKETCH

Remarks and Notes:

(1) Water Content determined after shear from partial specimen.

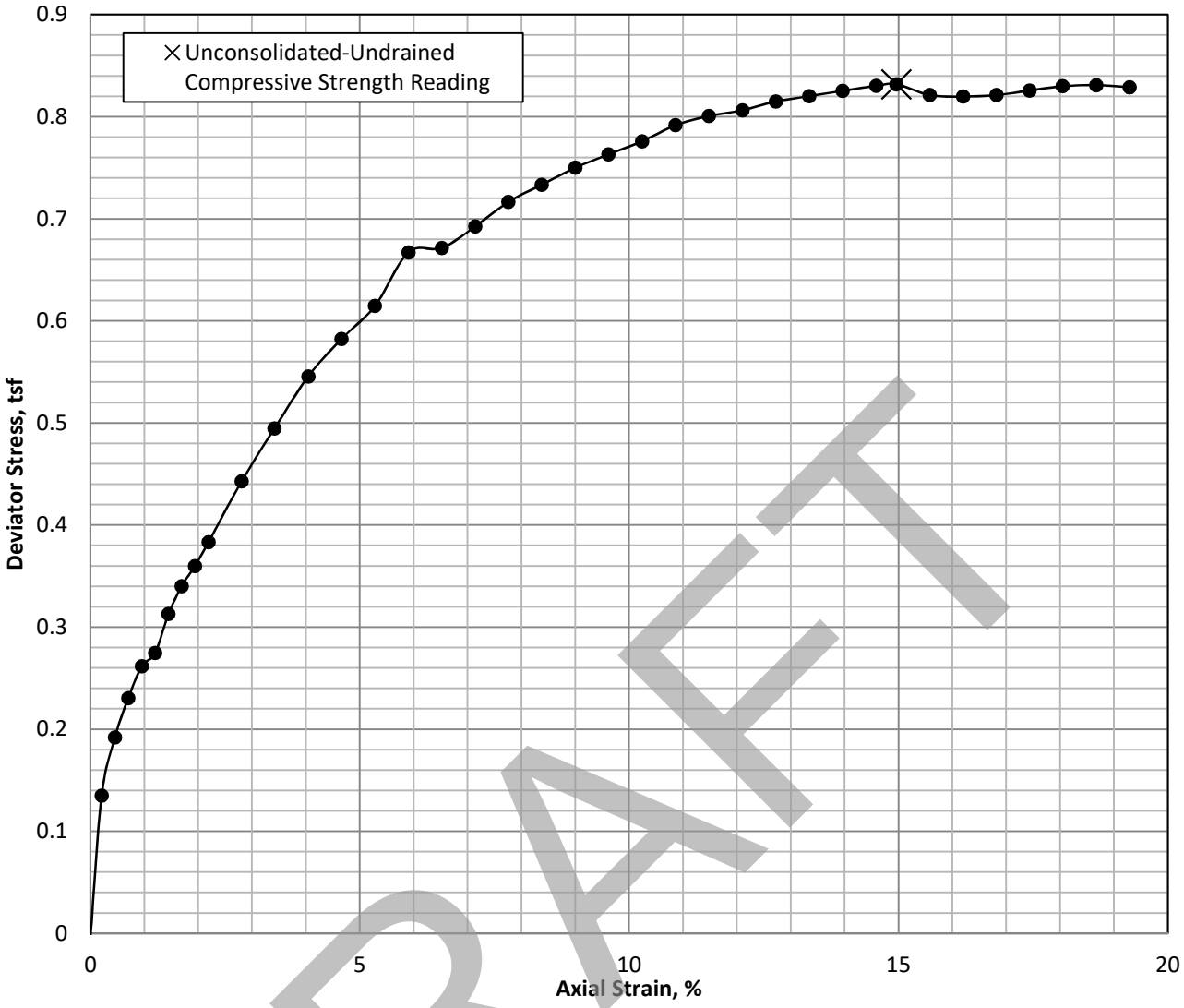
(2) Assumed specific gravity

Tested by: BB Reviewed by: CMJ

Test Date: 6/1/2018 Review Date: 6/7/2018

Langan Engineering **Project # 140184201**	**One Park** **West Hartford, CT**	**UNCONSOLIDATED-UNDRAINED COMPRESSION TEST**
TerraSense, LLC **Project # 7920-825**		**Boring: LB-03 Sample: U-1** **Section: C Depth: 21.7 ft.**

UNCONSOLIDATED-UNDRAINED COMPRESSIVE STRENGTH TEST, ASTM METHOD D2850



Specimen and Material Property Information

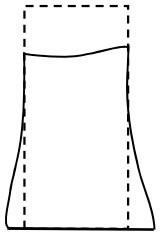
Sample Type: Intact tube sample

Description and/or Classification: CL, brown clay; layering noted

Cell Pressure (tsf)	Water Content (1) (%)	Wet Unit Weight (pcf)	Dry Unit Weight (1) (pcf)	Void Ratio (-)	Saturation (2) (%)	Length (inch)	Diameter (inch)	L/D (-)	LL/PL (-)	PI (-)	Specific Gravity (2) (-)
0 (Initial)	45.2	112.8	77.7	1.29	99.8	5.979	2.858	2.1			2.85
0.6	45.2	112.9	77.8	1.29	100.0	5.977	2.857	2.1			

Failure Summary

U-U Compressive Strength (tsf)	U-U Shear Strength, s_u (tsf)	Strain to Peak (%)	Strain Rate (%/min)
0.83	0.415	15.0	0.74



FAILURE SKETCH

Remarks and Notes:

(1) Water Content determined after shear from partial specimen.

(2) Assumed specific gravity

Tested by: BB Reviewed by: CMJ

Test Date: 6/1/2018 Review Date: 6/7/2018

Langan Engineering **Project # 140184201**	**One Park** **West Hartford, CT**	**UNCONSOLIDATED-UNDRAINED COMPRESSION TEST**
TerraSense, LLC **Project # 7920-825**		**Boring: LB-05 Sample: U-1** **Section: B Depth: 11.05 ft.**

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	---	Sample Type:	---	Tested By:	GA
Sample ID:	---	Test Date:	06/08/18	Checked By:	emm
Depth :	---	Test Id:	457429		

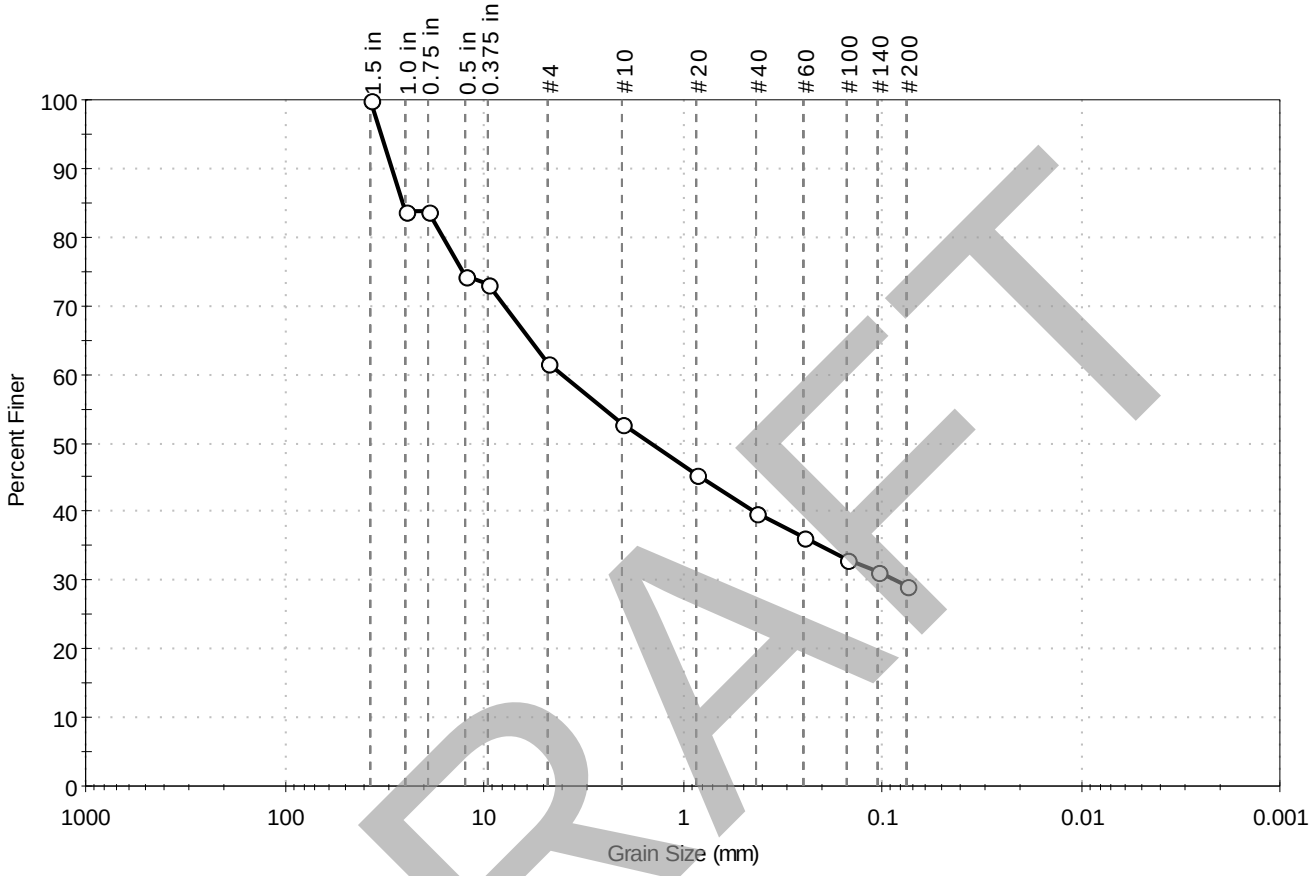
Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content, %
LB-01	- --	65-67 ft	Moist, very dark brown clayey gravel with sand	9.7
LB-03	- --	0-2 ft	Moist, very dark brown silty sand with gravel	9.3
LB-05	- --	50-52 ft	Moist, very dark brown clayey sand with gravel	10.0

Notes: Temperature of Drying : 110° Celsius

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-01	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/08/18	Checked By:	emm
Depth :	65-67 ft	Test Id:	457425		
Test Comment:	---				
Visual Description:	Moist, very dark brown clayey gravel with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	38.3	32.4	29.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1.0 in	25.00	84		
0.75 in	19.00	84		
0.5 in	12.50	74		
0.375 in	9.50	73		
#4	4.75	62		
#10	2.00	53		
#20	0.85	45		
#40	0.42	40		
#60	0.25	36		
#100	0.15	33		
#140	0.11	31		
#200	0.075	29		

Coefficients

D_{85} = 25.8617 mm	D_{30} = 0.0855 mm
D_{60} = 4.0342 mm	D_{15} = N/A
D_{50} = 1.4376 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

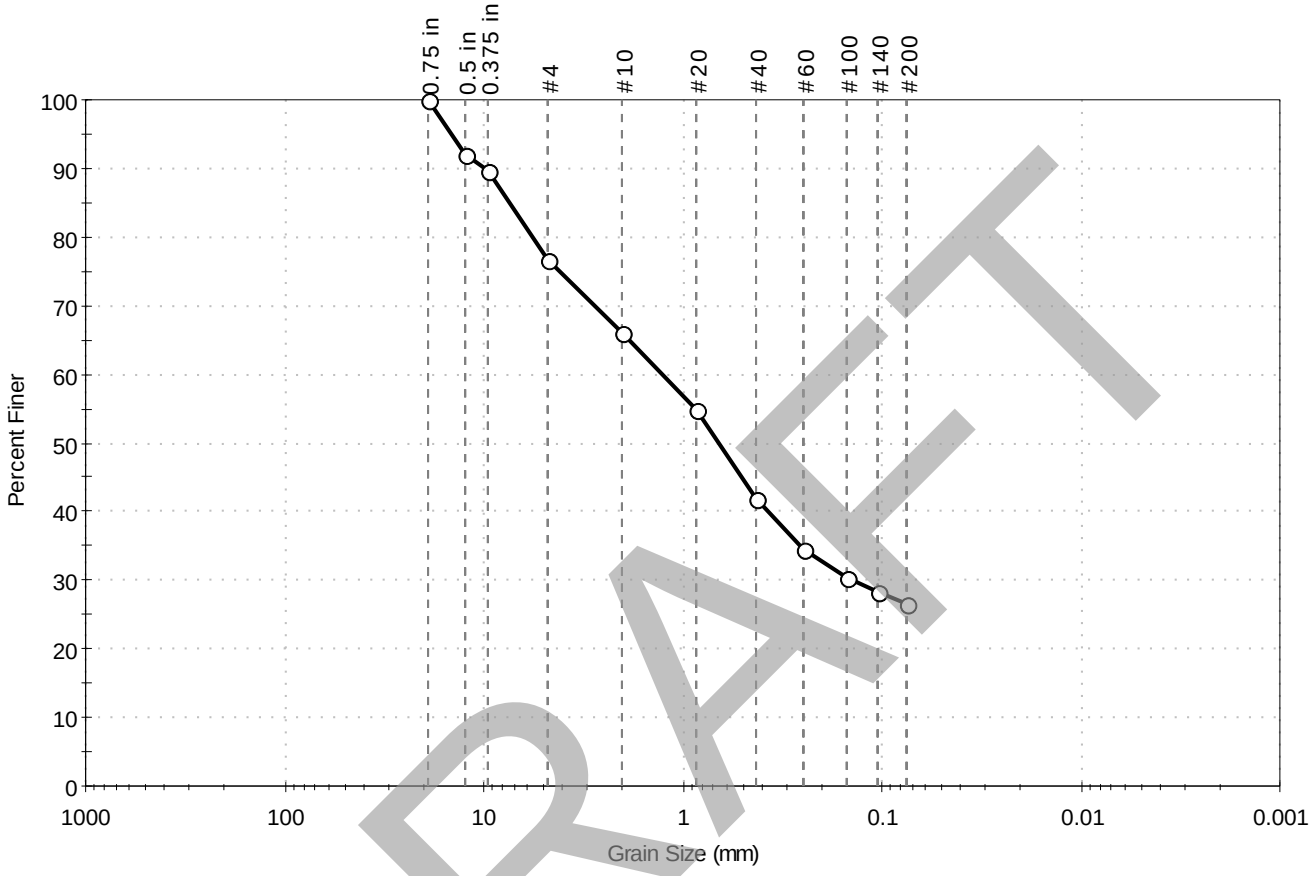
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-03	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/08/18	Checked By:	emm
Depth :	0-2 ft	Test Id:	457424		

Test Comment: ---
Visual Description: Moist, very dark brown silty sand with gravel
Sample Comment: ---

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	23.2	50.2	26.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	92		
0.375 in	9.50	90		
#4	4.75	77		
#10	2.00	66		
#20	0.85	55		
#40	0.42	42		
#60	0.25	34		
#100	0.15	30		
#140	0.11	28		
#200	0.075	27		

Coefficients

D_{85} = 7.4045 mm D_{30} = 0.1411 mm
D_{60} = 1.2532 mm D_{15} = N/A
D_{50} = 0.6541 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

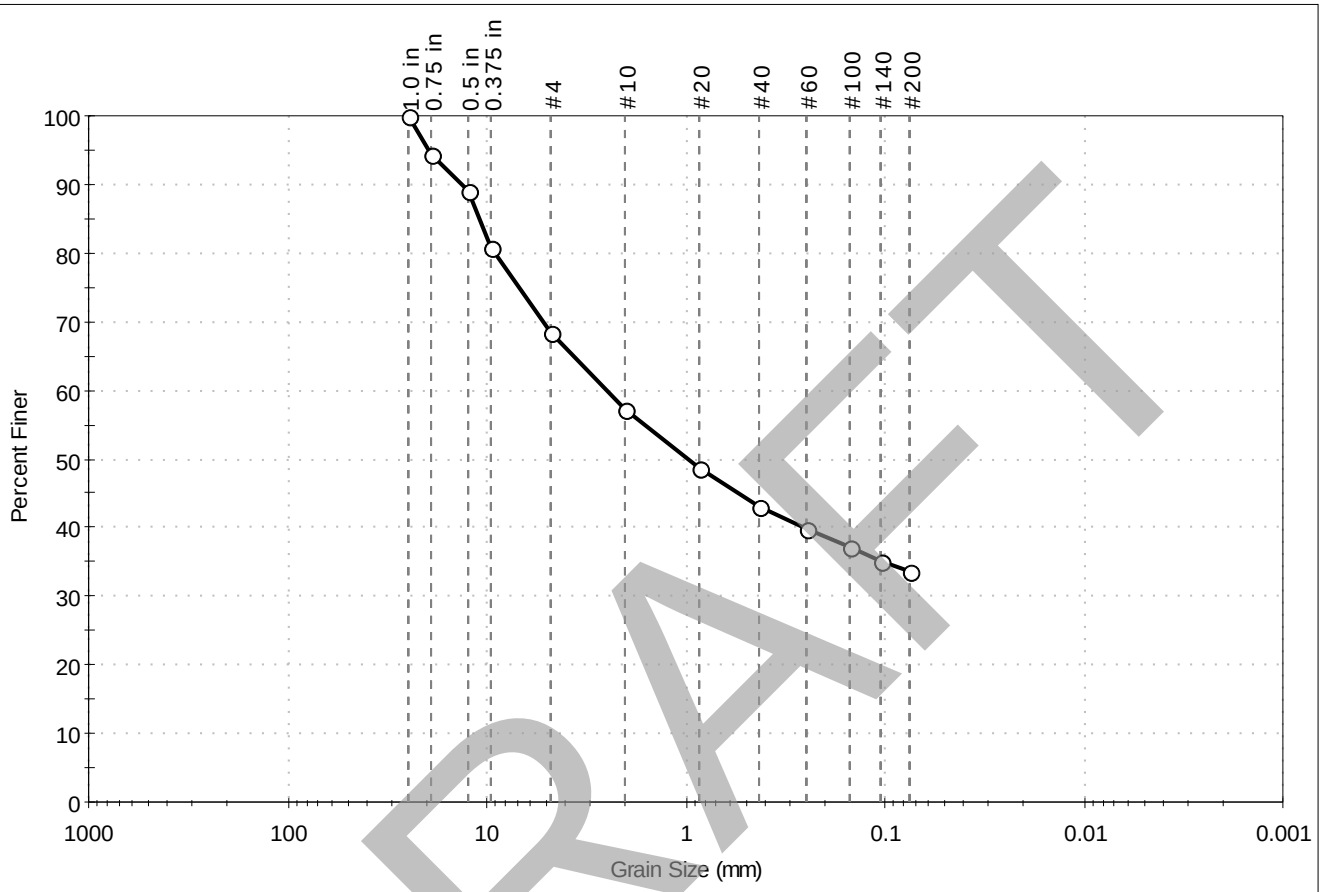
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-05	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/08/18	Checked By:	emm
Depth :	50-52 ft	Test Id:	457426		

Test Comment: ---
Visual Description: Moist, very dark brown clayey sand with gravel
Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	31.6	34.9	33.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	94		
0.5 in	12.50	89		
0.375 in	9.50	81		
#4	4.75	68		
#10	2.00	57		
#20	0.85	49		
#40	0.42	43		
#60	0.25	40		
#100	0.15	37		
#140	0.11	35		
#200	0.075	34		

Coefficients

D_{85} = 10.9412 mm D_{30} = N/A
D_{60} = 2.4878 mm D_{15} = N/A
D_{50} = 0.9599 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

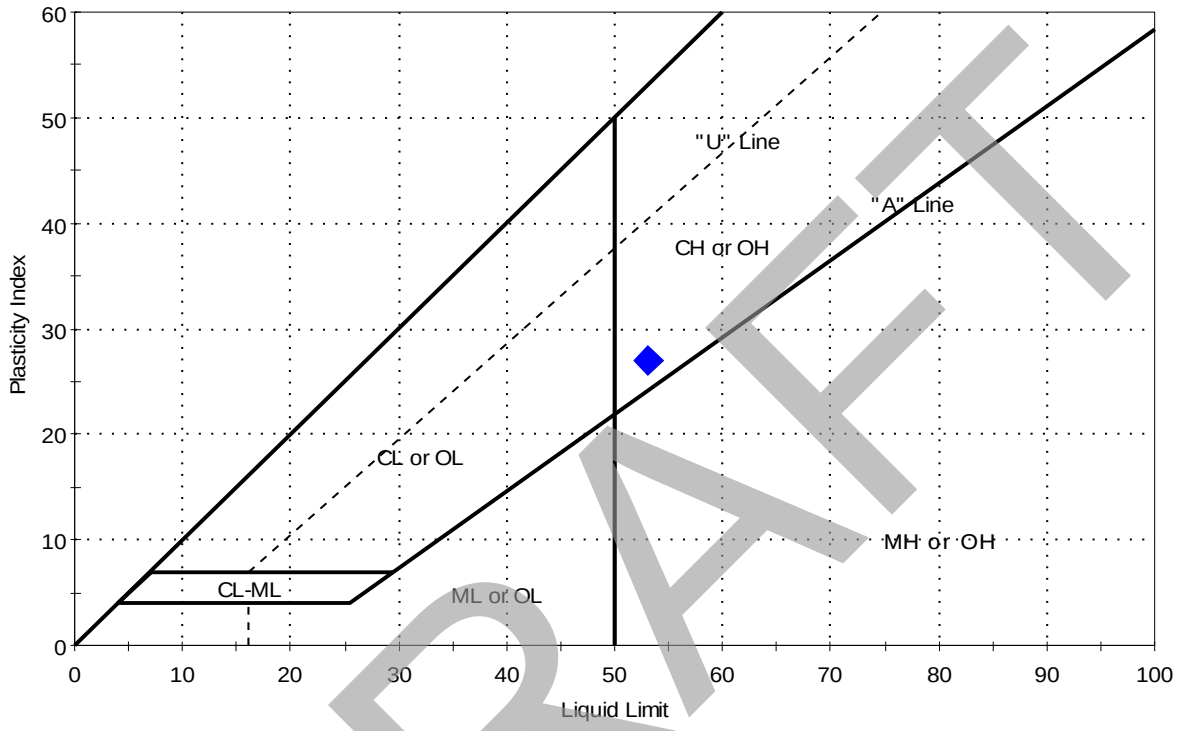
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-01	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/11/18	Checked By:	emm
Depth :	5-7 ft	Test Id:	457420		
Test Comment:	---				
Visual Description:	Moist, grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	---	LB-01	5-7 ft	35	53	26	27	0.3	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: NONE

Toughness: MEDIUM

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-02	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/11/18	Checked By:	emm
Depth :	45-47 ft	Test Id:	457422		
Test Comment:	---				
Visual Description:	Moist, dark reddish brown silt with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	---	LB-02	45-47 ft	27	n/a	n/a	n/a	n/a	

Dry Strength: NONE

Dilatancy: RAPID

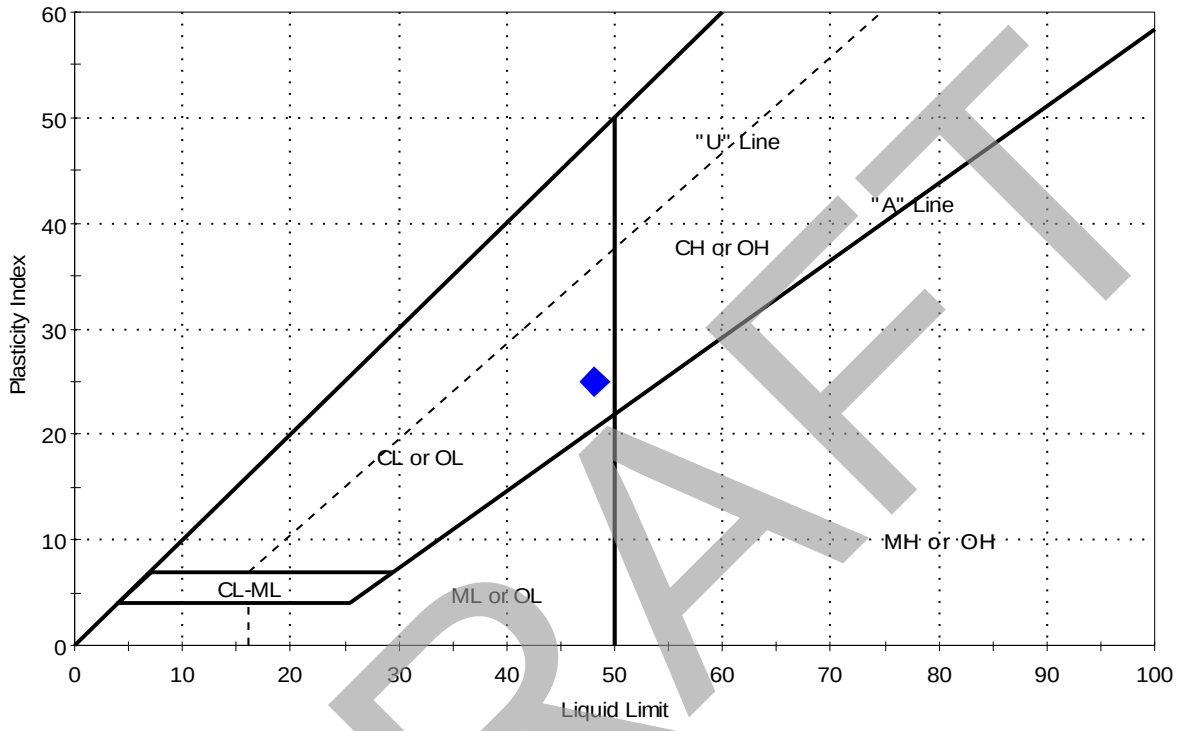
Toughness: n/a

The sample was determined to be Non-Plastic

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-03	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/11/18	Checked By:	emm
Depth :	30-32 ft	Test Id:	457421		
Test Comment:	---				
Visual Description:	Wet, reddish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	---	LB-03	30-32 ft	52	48	23	25	1.2	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

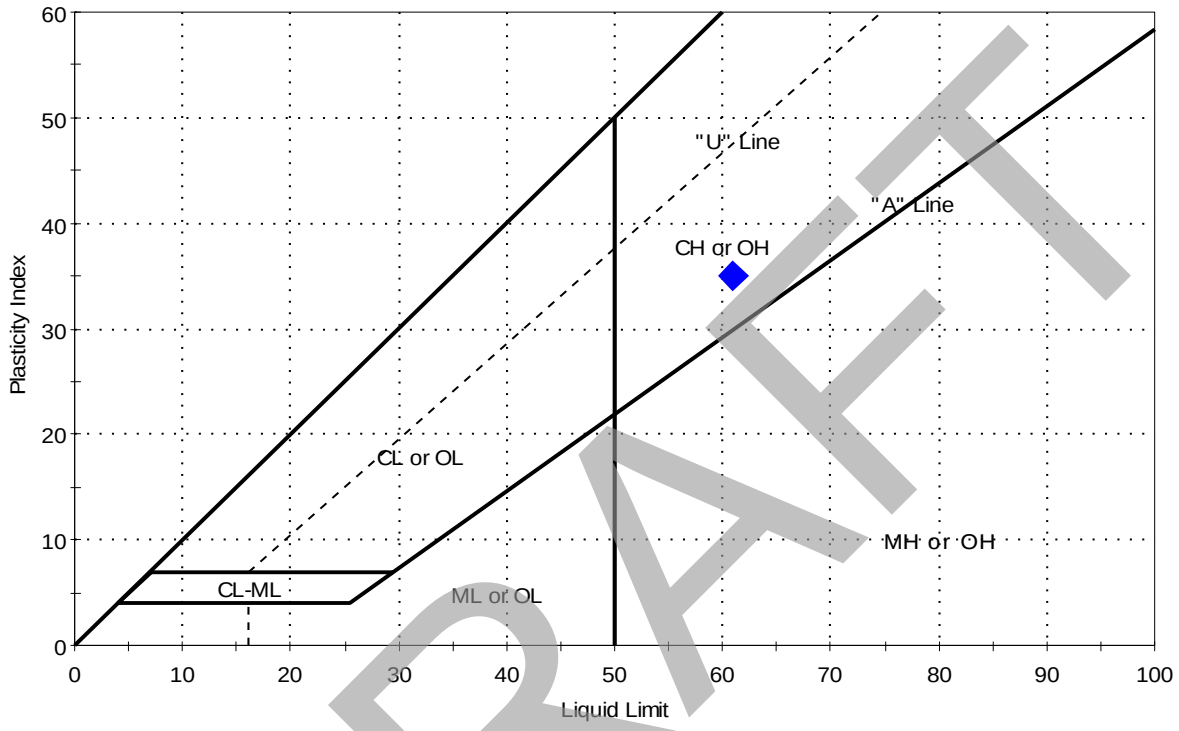
Dilatancy: SLOW

Toughness: MEDIUM

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-04	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/11/18	Checked By:	emm
Depth :	10-12 ft	Test Id:	457419		
Test Comment:	---				
Visual Description:	Moist, brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	---	LB-04	10-12 ft	45	61	26	35	0.5	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

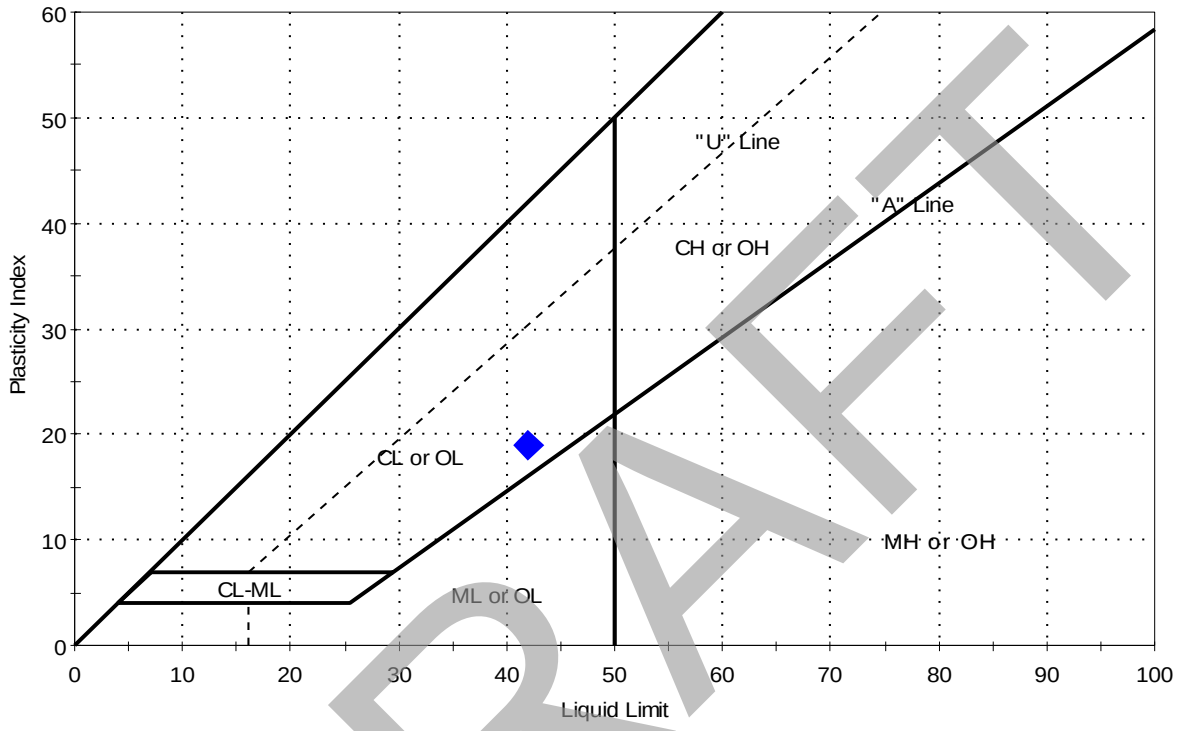
Dilatancy: NONE

Toughness: MEDIUM

Client:	Langan Engineering				
Project:	One Park				
Location:	West Hartford, CT			Project No:	GTX-308241
Boring ID:	LB-05	Sample Type:	jar	Tested By:	GA
Sample ID:	---	Test Date:	06/11/18	Checked By:	emm
Depth :	25-27 ft	Test Id:	457423		
Test Comment:	---				
Visual Description:	Moist, reddish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	---	LB-05	25-27 ft	42	42	23	19	1	

Sample Prepared using the WET method

Dry Strength: HIGH

Dilatancy: SLOW

Toughness: LOW